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MORE FINE PUBLICITY

We have just had the privilege of examining a portfolio containing copies of a series of six advertisements placed by the Sioux City Serum Company in a number of farm papers throughout the country. These ads ran from May to November, 1923. The total circulation of the periodicals in which these appeared is estimated at about 450,000.

In many cases the papers cooperated by inserting reading matter in their columns and some by sending marked copies to veterinarians. The publications which carried these ads are: *Nebraska Farmer, Nebraska Farm Journal, Farmer and Breeder, Iowa Homestead, Wallace's Farmer, Dakota Farmer, Duroc Bulletin, Poland-China Journal* and *Swine World.*

The advertisements were built around the following slogans: "Have Your Veterinarian Make the Diagnosis," "Corn Belt Prosperity Depends on Veterinarians," "Farmers Lose $25,000,000 Each Year from Hog Cholera," "Hog Cholera Must be *Prevented,* Not Cured," and "Save All Your Hogs."

The Sioux City Serum Company officials were so well pleased with the results of their 1923 campaign that they are now making preparations for a similar campaign this year. Who will be next?

THE WINTER MEETINGS

Although this issue of the JOURNAL is designated the "Index Number," it might well be called our "State Association Number," after a glance at its contents. We are pleased to be able to publish this month the reports of more than twenty meetings of state, provincial and local associations, including several veterinary short courses and conferences.

It will pay every member to read these reports. If you are an officer of an association, you can undoubtedly get numerous suggestions for your future programs, after reading and learning what other associations are having in the way of program material. If you are in the ranks, and for any reason not entirely satisfied with the way your local, state or provincial meetings are conducted, get an inspiration or two from the report of some other association and communicate them to your secretary. If you failed to see a report of your meeting in the JOURNAL, ask your secretary why.

For the first time Alabama and Michigan have put on short courses, in lieu of regular winter meetings. Both were huge successes. Alabama featured practice and Michigan featured meat and milk inspection, and in each instance the attendance was better than anticipated.

The California Practitioners' Week, with Drs. Hall and Ferguson as the attractions, was attended by 106 veterinarians. The Wisconsin Short Course brought out 37.5% of the practitioners in the Badger State, a splendid showing. The Iowa Short Course, with Dr. John W. Adams as the head-liner, brought out a splendid attendance.

The Cornell Conference, the sixteenth to be held, was fully up to the high average established by those of the past. The Conference at the University of Pennsylvania attracted an attendance of over two hundred. The Kansas Conference developed a great deal of enthusiasm and optimism, while the report of the Washington Post-Graduate Course indicates that it struck a responsive chord in the Northwest.

The A. V. M. A. was represented at a number of these meetings. President Stange attended those held in Illinois, Virginia, Ohio, Iowa, Minnesota, Wisconsin and South Dakota, and the Secretary-Editor was present at the meetings held in Illinois, Iowa, Minnesota, Michigan and Kansas. Executive Board members were in attendance at a number of these meetings as well as several others.

Some of our state associations are getting "along in years." The Illinois, Pennsylvania and Ohio Asociations held their forty-first annuals. The New Jersey meeting was the fortieth. Iowa held her thirty-sixth. Michigan will hold her forty-second in June.

HELP OUR LEGISLATIVE COMMITTEE

Our Committee on Legislation is hard at work. Every member of the Association should feel it is his duty to assist the members of our Committee on Legislation in their efforts to secure the enactment of measures designed to benefit the profession. Some of the legislative problems were outlined in the February issue of the JOURNAL. We again ask the support of every member in behalf of the Copeland Bill (S-1671), providing for the compulsory testing of clinical thermometers. If there is any doubt in the mind of any member as to the necessity for something of this kind, read the report on another page of this issue, made by Dr. C. J. Marshall, a member of our Committee on Legislation, after he attended the recent Clinical Thermometer Conference in Washington.

The chairman of our committee, Dr. J. G. Ferneyhough, asks for suggestions relative to legislation that will better control the use of biological products, particularly those containing living viruses. It will be recalled that ex-president Welch, in his address at the Montreal meeting, emphasized the necessity for legislation along this line. Quoting from Dr. Welch's presidential address, he stated:

> "Anthrax, blackleg and hog cholera can be kept in a state bordering on complete suppression, but it will never occur so long as vaccines of those diseases are in the hands of the laity. It is therefore imperative, before we can arrive at our highest point of service to the public, that such vaccines, viruses, sera and biologics as are used as diagnostic agents and in combating contagious and infectious diseases, be accessible to none other than veterinarians. It will require time, perhaps, to educate the people to the necessity for such action, but time and experience will untimately convince all concerned that there is no other way, and that the incompetent county agent and farmer are dangerous and expensive factors in the control and suppression of infectious and contagious diseases of all farm animals."

If you have any opinions as to the advisability of attempting to secure any such legislation at this time, communicate them to Dr. Ferneyhough, at 508 Lyric Building, Richmond, Virginia. While on this subject, we might direct attention to a resolution recently adopted by the Medical Council of the Federation of Medical and Allied Services of Great Britain:

"That the sale of tuberculin and its use for diagnostic or medicinal purposes shall be restricted to qualified medical men and veterinary surgeons."

The demand for legislation to bring the sales and use of tuberculin under Government control is being supported by the Agricultural Committees of County Councils throughout Great Britain, as well as by the National Veterinary Association, but is opposed by the National Farmers Union. Evidently, our confreres across the water are confronted with a problem closely analogous to that existing in this country.

SO IT GOES

It was with a certain degree of satisfaction that we returned from the meeting in Manhattan, Kansas, recently, with three applications for membership. Upon our return to the office three more applications were found in the mail which had accumulated during our five-day absence. However, in the same pile of mail, there were communications advising us of the deaths of six members of the Association. It certainly was an example of six one way and half a dozen the other, leaving our membership just about where it was before we started.

Death is making inroads upon our profession. The report of the Committee on Necrology,presented at Montreal, and to be published in the JOURNAL next month, showed that our Association lost fifty-one by death last year. It is estimated that approximately one-third of the veterinarians in the United States and Canada are members of the A. V. M. A. Assuming that there was the same ratio of deaths among the non-members last year, the total number of deaths in the profession was around 150. Do not forget that less than that number of new veterinarians will be graduated this year from all the veterinary colleges in the United States and Canada.

JUST A COURTESY

Members are requested, when submitting manuscripts of original articles, such as papers and case reports, to advise the editor whether these manuscripts are being submitted for publication elsewhere. This is nothing more than a courtesy due the editor of any publication. This rule, however, does not apply to reports or notices of meetings, short news items, personals, etc. May we have your cooperation in this matter?

THREE ANNOUNCEMENTS

The Rock Island line has been designated as the official route to Des Moines, in connection with the annual convention, August 19-22, 1924.

The Fort Des Moines Hotel has been selected, by the Local Committee on Arrangements, as official headquarters for the convention.

Prospective exhibitors, who wish to secure information relative to space, should communicate with Dr. H. D. Bergman, Iowa State College, Ames, Iowa.

EXECUTIVE BOARD ELECTION

The polls for the Executive Board election being held in District No. 4 will close on March 3, 1924. At this writing the nominations of three members seem assured. The fourth and fifth candidates are in doubt, with five nominees fighting for these two positions. A few votes would assure any one of the five a place on the election ballot, which will be mailed to all members, in the district, in good standing on March 3. The polls will remain open until May 3, 1924.

COMING VETERINARY MEETINGS

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York City. Mar. 5, 1924. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Southwestern Michigan Veterinary Medical Association Kalamazoo, Mich. Mar. 12, 1924. Dr. George McCollister, Secretary, Kalamazoo Mich.

Arizona Veterinary Medical Association. Hospital Dr. J. C. McGrath, Phoenix, Ariz. Mar. 15, 1923.

Southeastern Michigan Veterinary Medical Association. Detroit, Mich. Mar. 19, 1924. Dr. H. Preston Hoskins, Secretary, 735 Book Bldg., Detroit, Mich.

Inter-State Veterinary Medical Association. Chamber of Commerce Club, Sioux City, Iowa. Mar. 20, 1924. Dr. P. L. Ellis, Secretary, Merrill, Iowa.

Massachusetts Veterinary Association. American House, Boston, Mass. Mar. 26, 1924. Dr. C. H. Playdon, Secretary, Reading, Mass.

Maine Veterinary Medical Association. Waterville, Me. Apr. 7, 1924. Dr. P. R. Baird, Secretary, Waterville, Me.

A STUDY OF RABIES FROM THE STANDPOINT OF ETIOLOGY[1]

By R. A. Kelser, Ph.D., D.V.M.

Captain, Veterinary Corps, U. S. Army, Army Medical School, Washington, D. C.

Rabies or hydrophobia is one of the oldest diseases known to mankind, the history of the malady dating back to the days of Aristotle. The contagious nature of the disease was recognized even in those days, the affection in man being readily associated with the bites of rabid dogs. It was common belief, however, that rabies in animals could develop spontaneously as a result of warm weather, heavy meat diet, lack of drinking water, unsatisfied sexual desire, etc. Even today this old belief, passed along from generation to generation, is still held by a small percentage of the laity.

In 1804, Zinke, studying the disease in dogs, demonstrated the infectiousness of the saliva. It was seventy-five years later, however, before any appreciable amount of research was undertaken by laboratory workers. In 1879, Galtier[1] showed that rabies could be transmitted to rabbits through artificial inoculation, and that they developed the disease in the "dumb" or paralytic form. These findings disclosed a convenient and safe method for the experimental study of hydrophobia, and marked the beginning of more extensive investigation of the malady.

In 1881, Louis Pasteur,[2] with his associates, Chamberland and Roux, found that the virus of rabies had a special affinity for nerve tissue, it being found concentrated in the central nervous system. During the next few years (1881-1888) the brilliant work of Pasteur,[3] which culminated in the perfection of a successful method of immunization against rabies, was accomplished.

In 1903, Negri,[5] an Italian, of Pavia, Italy, described the finding of a certain type of "body" in the cells of the central nervous system, especially in the large ganglion cells of the hippocampus major, and in the Purkinje cells of the cerebellum, of animals dead of rabies. Negri believed these bodies to be pathognomonic of rabies. In fact he considered them the actual cause of the disease. Confirmation was soon forthcoming as to the presence of these bodies being definitely indicative of hydrophobia. Vol-

[1]Presented at the sixtieth annual meeting of the American Veterinary Medical Association, Montreal, Canada, August 27-31, 1923.

pino,[6] D'Amato,[7] Bertarelli,[8] Bosc,[9] Poor,[10] and several other investigators published reports in which they indicated that they had likewise observed the bodies described by Negri. Thus the now well-known method of diagnosing rabies was established, and, in the large percentage of cases, makes time-consuming, animal-inoculation tests unnecessary.

In the same year (1903) that Negri published his findings, Remlinger [11] reported that the virus of rabies could be passed through bacteria-retaining filters and, while miscrocopically and culturally sterile, would still produce the disease. The following year (1904) Bertarelli and Volpino[12] published a report confirmatory of Remlinger's work. In this country the filterability of the virus was demonstrated first by Poor and Steinhardt,[13] and later by a number of other investigators.

While the specificity of "Negri bodies" for a diagnosis of rabies has been proved beyond all doubt, investigators have become divided in opinion as to the exact relation which such bodies bear to the disease. In this respect, authorities are largely divided into two groups. One group regards the Negri body merely as a peculiar type of cell degeneration, characteristic of rabies, but of no etiological importance. The second group, with Negri, believe that these bodies are not only diagnostic of rabies, but are protozoan organisms and actually the causative factors.

Those who adhere to the opinion that the Negri body is a process of degeneration, in arguing against its being a definite protozoan organism, point to the filterability of the virus; to the absence of Negri bodies in nerve tissue demonstrated to be infectious; and, to the marked scarcity and minute size of the bodies in "fixed-virus" infections, as supporting their contention. On the other hand, those who believe that the Negri body is the inciting factor concerned in rabies point out that these bodies are exceedingly variable in size, and that in some stages of their life cycle it is entirely possible that forms capable of passing bacteria-retaining filters occur. Further, it is argued that these bodies are occasionally seen free, outside of the nerve cells, and that where nerve tissue containing Negri bodies in the cells is triturated and treated with antiformin, microscopic examination will reveal numerous bodies, unaltered in appearance, which have been freed from the cells. Such findings, it is contended, would not be likely were these bodies merely areas of degeneration. Again, their definite outline, regularity of

structure and staining characteristics are referred to as opposing the cell degeneration theory.

In 1906, Williams and Lowden[14] pointed out that they had observed cyclic changes in the bodies described by Negri, and concluded that they were a type of sporozoa and the actual cause of the disease. They proposed that they be called "*Neurocytes hydrophobiae.*" Subsequent studies by Calkins[15] lend support to the finding of Williams and Lowden as regards the nature of these bodies. However, aside from Calkins' work, there appears to have been but little published in the way of reports of investigations definitely confirmatory or contradictory of the work of Williams and Lowden.

As might be expected, numerous attempts to cultivate the rabies virus have been made. With one possible exception, nothing of a definite nature has come from such efforts. The exception noted is the work of Noguchi.[16] In 1913, he published a report in which he indicated that he had been successful in cultivating a protozoan-like organism resembling, in some forms, the Negri body. There is, however, a diversion of opinion among scientists as to the significance of Noguchi's findings.

Studies Made at the Army Medical School

During the past two years the writer has devoted considerable time to a study of rabies, especially as regards the nature of the Negri body and its relation to the disease. While the work is still in progress and incomplete, it was thought that a very brief report on some of the results obtained with fixed virus might prove of interest.

While the plan of study involves consideration of both "street-" and fixed-virus infections, the work so far has been largely with the latter. It was decided to give primary consideration to fixed-virus infections for several reasons. First, the period of incubation in rabbits is, with few exceptions, definite and constant, thus offering promise of more accurate results than might be obtained with street virus. Then, as the marked scarcity and character of Negri bodies in fixed virus infection have been frequently held out against the bodies as inciting factors, it was desired, first of all, to make an exhaustive study of the nerve tissue in such type of infection.

In our experiments the procedure has been to inoculate a series of rabbits, subdurally, with a fresh emulsion of the medulla of a virus rabbit, and then destroy one or more of the inoculated

animals at 24-hour intervals for material for study.

The virus employed is known to us as "Fixed Virus Mulford," and is capable of bringing rabbits down with well-marked symptoms of rabies on the seventh or eighth day following inoculation. The inoculum is prepared by emulsifying a small piece of the medulla of a rabbit which has just succumbed to the disease, or which has just been destroyed, with 2 or 3 cubic centimeters of sterile physiological salt solution. This is immediately inoculated subdurally into the experiment rabbits, giving a dose of $\frac{1}{8}$ cc. It is preferable to use at least 16 rabbits in a series. This permits of the destruction of at least two animals every 24 hours up to and including the time of advanced symptoms.

It has been our practice to bleed the animals to death, with a view to having the brain tissue as free of blood as possible. Immediately after death, the brain and cord are carefully removed, and a number of "touch" preparations made from the hippocampus major, cerebellum, cerebral cortex and cord. The staining methods employed include those of Mann, Giemsa, Van Gieson, and Lentz, the first named being used to a greater extent than the other, except where it was desired to study the structure of the bodies in detail.

The procedure followed in making and staining a "touch" preparation may be briefly described as follows: A scrupulously clean, new slide, free from all flaws and scratches, is pressed firmly against a fresh, clean-cut surface of a small portion of nerve tissue, which has been placed on an embedding block, cut surface up. The pressure should be sufficient to cause the tissue to spread out against the slide, leaving a thin, even film of nerve tissue on same when withdrawn. The slides are immediately placed in methyl alcohol for 2 to 3 minutes to fix the films. They are then stained for 15 minutes, when Mann's stain is employed, and washed in distilled water. Next they are passed rapidly through 50%, 75%, 95% and absolute alcohol, and then cleared in xylol. In such preparations the nerve cells stain light blue and the Negri bodies a deep pink. In specimens stained overnight with Giemsa stain, the internal structure of the body can be brought out to better advantage. With this stain the Negri body appears a robin's-egg blue, with its granules staining red.

Microscopic Findings

Preparations from a total of 64 rabbits, inoculated with fixed virus and destroyed at different periods, have been studied.

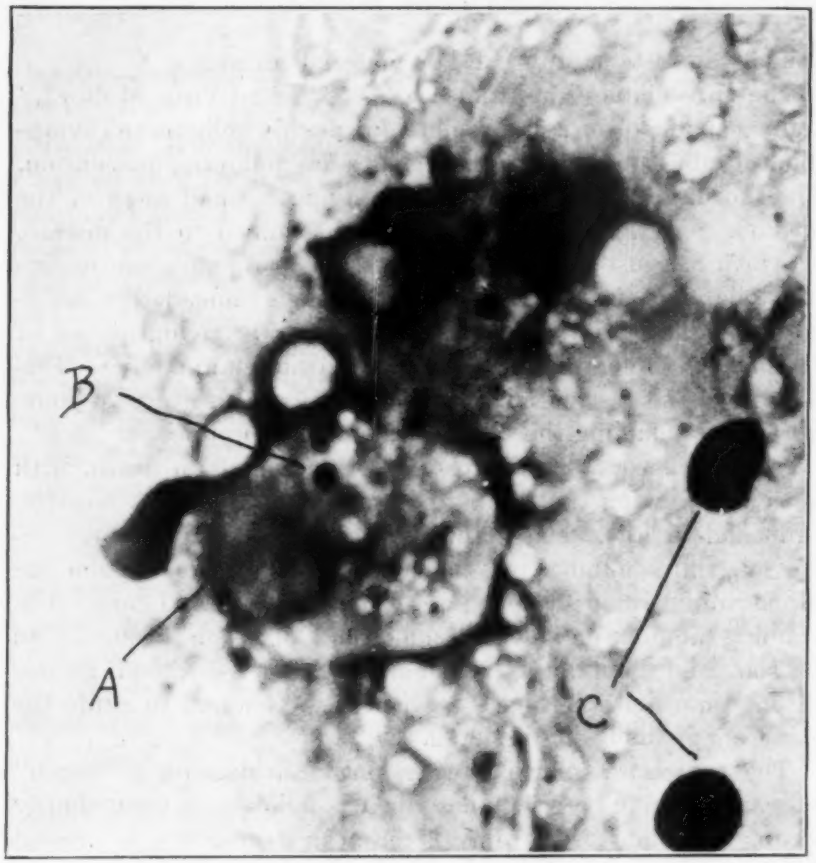


FIG. 1. Preparation from hippocampus major of rabbit V-3, an animal destroyed on third day subsequent to inoculation with fixed virus. A, nerve cell; B. Negri body; C, red blood cells.

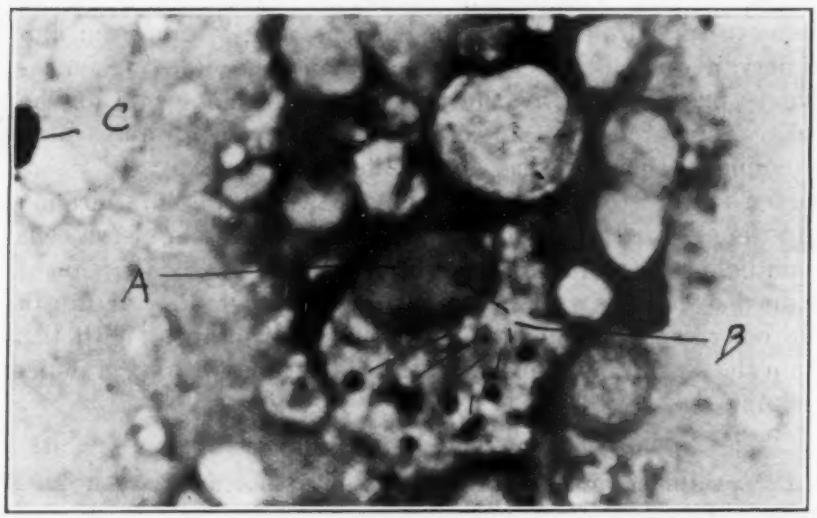


FIG. 2. Preparation from cerebellum of rabbit V-3, an animal destroyed on third day subsequent to inoculation with fixed virus. A, nerve cell; B, Negri bodies; C, red blood cell.

The specimens from rabbits destroyed 24 hours subsequent to inoculation all proved negative.

A microscopic study of the preparations from the hippocampus major and cerebellum of several of the rabbits, destroyed 48 hours after inoculation, revealed a few, minute, highly refractile bodies which stained a very light pink. In a few of these bodies a minute granule, staining blue, was noted. These structures, while all very small, varied somewhat in size. Some were barely

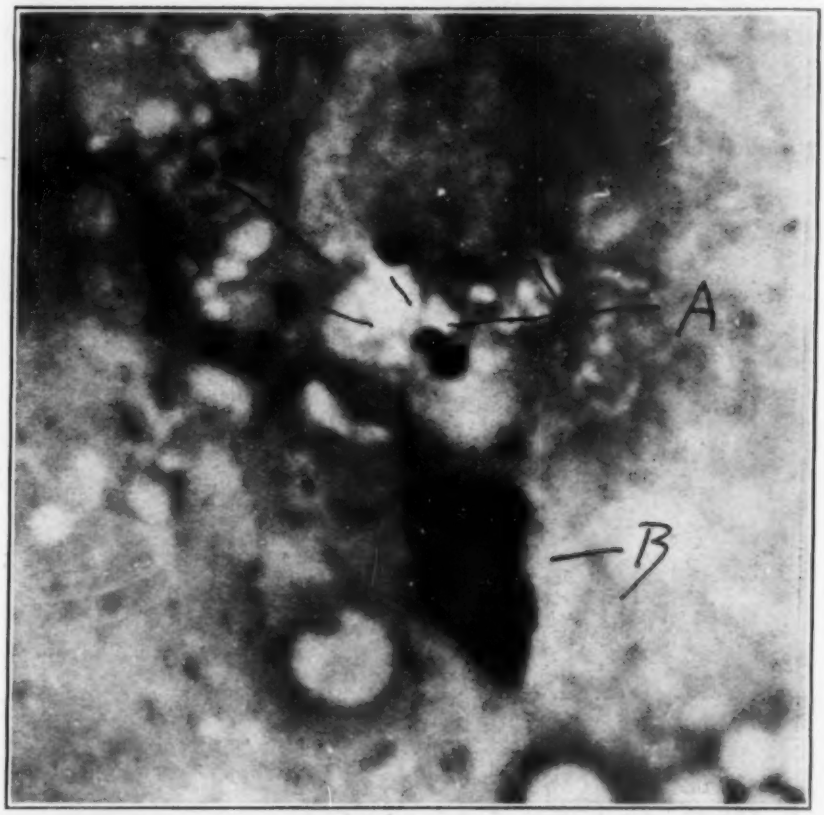


FIG. 3. Preparation from hippocampus major of rabbit D-3, an animal destroyed seventy-two hours subsequent to inoculation with fixed virus. A, Negri bodies; B, distorted red blood cell.

visible, others larger. In most cases they appeared round, but occasionally an oval form was noted. In some instances, on careful focusing, a halo, suggestive of a capsule, appeared around the body. These structures are apparently identical with some of those described by Williams and Lowden. Rabbits inoculated

with an emulsion of the tissue containing these bodies developed rabies.

Preparations from several rabbits destroyed 72 hours subsequent to inoculation have proved to be of great interest. The microscopic examination of films from the cerebellum and the

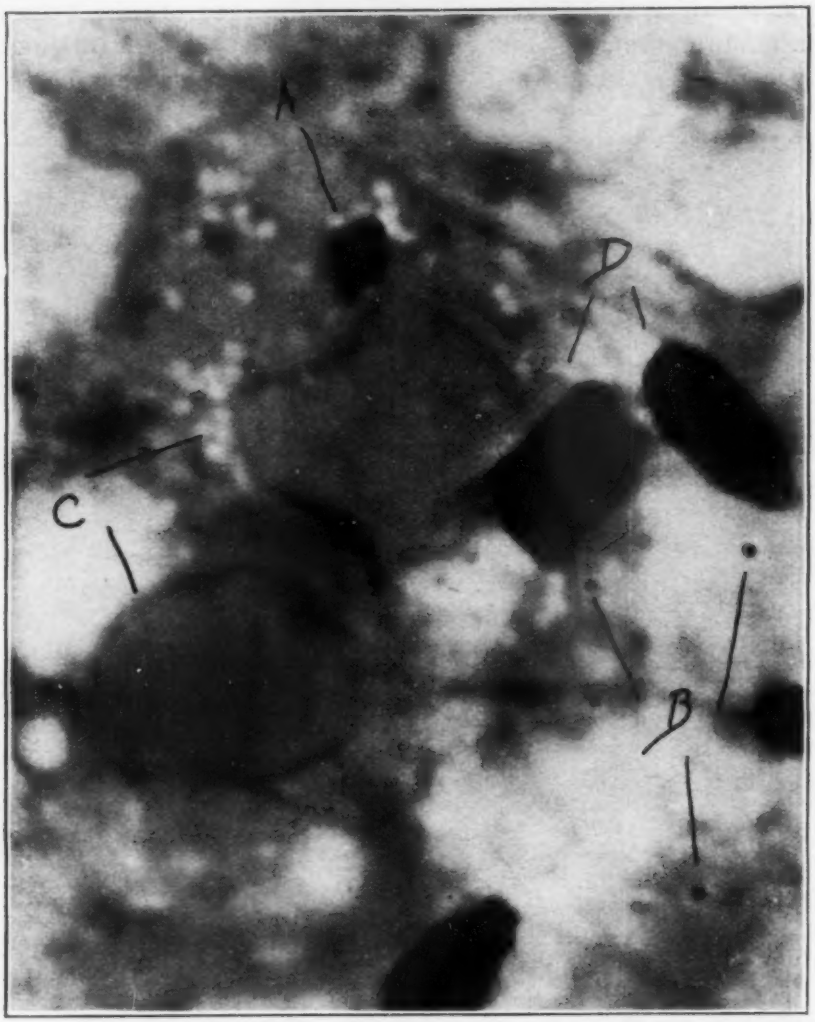


FIG. 4. Preparation from the cerebellum of rabbit V-3. A, group of four Negri bodies apparently just completing division; B, small Negri bodies; C, nerve cells; D, blood cells.

hippocampus major, in these cases, has revealed, in addition to numerous small bodies, a considerable number of larger bodies, having all the characteristics of those described by Negri, undergoing cyclic changes. These bodies appear as large as those

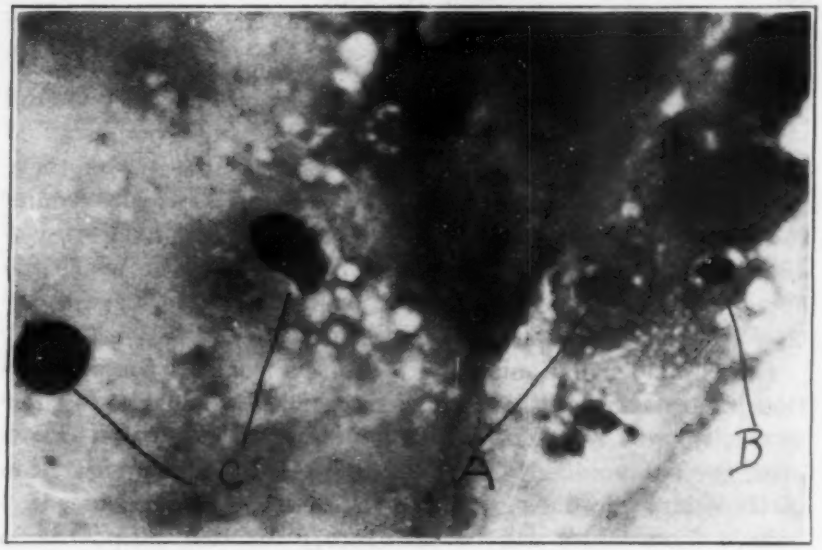


FIG. 5. Preparation from the hippocampus major of rabbit D-3. A, group of Negri bodies undergoing division; B, single Negri body in the process of division; C, red blood cells.

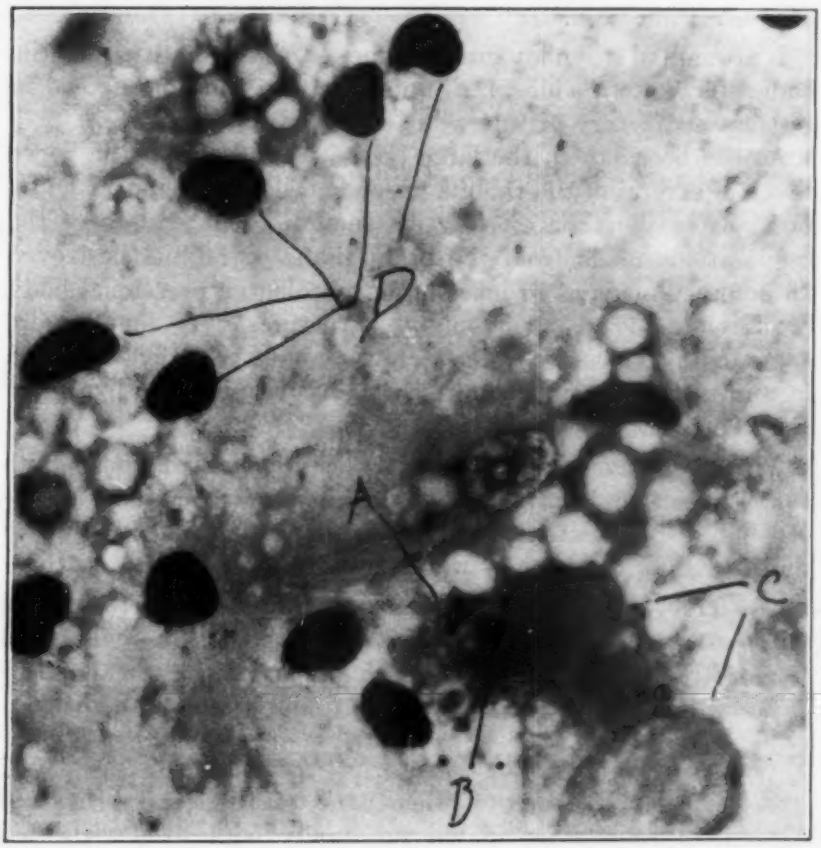


FIG. 6. Preparation from the hippocampus of rabbit F-3. A, chain of three Negri bodies; B, larger Negri body; C, nerve cells; D, blood cells.

commonly found in street virus infection, and, in a number of instances, appear to be dividing by fission. They were found both in and outside of the nerve cells. The small bodies noted were found in rather large numbers throughout some of these preparations. They have the same characteristics as those found in some of the preparations from several of the rabbits destroyed 48 hours after infection. Several fields were found in which the appearance of groups of these small bodies tended to suggest that they had just been liberated from some type of "parent" cell.

I have made some microphotographs of some of the preparations, and have a few lantern slides which I would like to show at this time. I regret that I cannot show these in color. However, the outstanding feature of this work is the demonstration of these large-sized Negri bodies in fixed virus infection, and I believe these slides will be satisfactory for that purpose. So far as I have been able to determine, there have been no previous reports of findings of this particular character in connection with fixed virus infection.

I attempted to photograph some of the minute, refractile bodies for lantern slides, but, unfortunately, did not succeed in getting satisfactory pictures, due to their very small size.

As has been noted, the large bodies were found in the nerve tissue of several of the rabbits which had been infected 72 hours previous to the time of their destruction. One or two of the preparations made from the brain tissue of rabbits destroyed 96 hours subsequent to inoculation revealed an occasional body of the large type. The minute structures were found more commonly. No bodies of the large type have been demonstrated in any of the preparations from rabbits permitted to live more than 96 hours after infection.

While not demonstrated in every case examined, the minute forms were found, irregularly, in specimens from animals representing all periods from 48 hours subsequent to infection up to and including the time of well-marked symptoms and death.

No large forms were noted in preparations from the spinal cords of the various rabbits. The minute bodies, however, were demonstrated in a number of such preparations. Small forms only were noted in the preparations from the cerebral cortex.

Summary and Conclusion

A microscopic study of the tissue of the central nervous system of rabbits inoculated subdurally with fixed virus has

demonstrated, 72 hours after such inoculation, bodies having the morphological and staining characteristics of Negri bodies, undergoing cyclic changes. These bodies appear as large as those commonly noted in street virus infection, and were found dividing by fission. Another type of minute, highly refractile body, similar to that described by other investigators, was found in considerable numbers 48 hours and later, subsequent to infection. The grouping of these small bodies, in several instances, suggested that they had possibly just been liberated from some type of "parent" cell.

At the present time, scientific authority is divided on the relationship of Negri bodies to rabies, some holding that these bodies are the cause of the disease, others maintaining that, while they are diagnostic of the malady, they are merely small areas of cell degeneration and thus not the etiological factor.

The findings herein reported deny the theory that Negri bodies are processes of degeneration, and lend support to the contention that they are a type of protozoan organism primarily responsible for the disease.

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[12]Bertarelli & Volpino: (1904) Centralbl. f. Bakteriol., Ite Abt. Orig., XXXVII, p. 51.
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[14]Williams & Lowden: (1906) Proc. N. Y. Path. Soc., 1906, Jrn. of Inf. Dis., Vol. 3, p. 452.
[15] Calkins: (1906) Proc. N. Y. Path. Soc.
[16]Noguchi: (1913) "Contribution to the Cultivation of the Parasite of Rabies." Jrn. Exp. Med., Vol. 18, p. 314.

DISCUSSION

DR. A. EICHHORN: Mr. President, I think Capt. Kelser's paper is of very great interest to those who have worked on rabies; particularly so with regard to the etiology of the disease. The contention that the Negri bodies are the causative factors of rabies is now more or less generally accepted. However, some still maintain that they represent only degenerative processes in the central nervous system; particularly so in the nerve cells.

I think the microphotographs which were thrown on the screen here seem to indicate that there occurs some change in these bodies during certain periods, which in the paper were described as probably being divisions and representing the multiplication of the Negri bodies. I don't think that Capt. Kelser fully proved that contention, with the exception that he showed these bodies to divide or apparently divide, but it is possible that the micro-

photographs have not reproduced the true picture as distinctly as in the stained preparation.

However, the most interesting feature is that the bodies occurred in the brain cells of rabbits only three days infected. It seems that in animals under natural conditions the symptoms appear usually when the Negri bodies are already recognizable in the central nervous system. In dogs particularly we always thought that the first symptoms developed after the central nervous system has been invaded by the Negri bodies; that is, after the Negri bodies are recognizable in the nerve cells.

In this instance, however, as Capt. Kelser pointed out, there were practically no symptoms, and apparently the Negri bodies were present there in considerable numbers. So that this is contrary to our former belief, and I think that is very interesting, because it might throw an entirely new light as to the invasion of the Negri bodies in the brain or the central nervous system and their relation to the lesions that are producing symptoms in the animal.

I certainly would like to know if Capt. Kelser could give us the information as to what the proportion of the infestation of the nerve cells was on the third day in the rabbits, as compared with ordinary brains examined after the animal died from the natural infection, or artificial infection, for that matter. (Applause.)

Dr. Frank W. Schofield: I would like to emphasize what Dr. Eichhorn has said with regard to the street type of rabies and the fixed-virus type. In dogs' heads that we get from the street type of rabies, one finds that if the animal has been killed early in the disease, there is great difficulty in finding Negri bodies, whereas, if it is killed late in the disease, they are found almost always quite easily; in fact, we advised veterinarians to tie up dogs which showed symptoms of the disease, and, if the animal died, to forward the head to the laboratory. In such cases, after death, the Negri bodies could almost always be found; whereas if the animal is killed in the early stage of the disease, one will have to hunt the Negri bodies for a long time, and even then frequently fail to find them. According to Capt. Kelser, in fixed virus, the reverse seems to be the case, and after the seventy-second hour they seem to be very numerous, disappearing as the disease progresses. That is one thing which it is very difficult to understand.

If the Negri bodies are degeneration bodies and they are well marked at the seventy-second hour, ought not the brain cells to show marked degeneration at the termination of the disease? What is the picture of the brain cells at the time the rabbit dies? If the bodies are parasites, the cells of the brain might have escaped some very marked degenerative changes. Why is it that in "dumb" rabies we have such difficulty in finding Negri bodies, as well as in the brain cells of human beings? We rarely find Negri bodies in "dumb" rabies, while in street rabies they are constantly found.

Dr. E. M. Pickens: I would like to ask Capt. Kelser if he has done any work on the ganglia and the salivary glands?

Mr. J. M. Whittlesey: I would like to ask Dr. Kelser if he has done anything that would show the period of incubation after the first biting; how soon the dog would become infectious after he had been bitten? We have so many instances where the first noticeable effect of the disease is in the dog in turn biting other dogs.

Dr. R. A. Kelser: In reply to Dr. Eichhorn's question, I might say that the percentage of Negri bodies in the preparations from animals destroyed 72 hours after infection was greater than in preparations from rabbits permitted to die of fixed-virus infection. The few slides which I have here are but representative of a number of fields noted in the microscopic slides from the 72-hour preparations. From the standpoint of demonstrating the cyclic changes, possibly I do not have the best photographic preparations. We selected, for microphotographs, fields in the preparations which we thought would stand out best, that is, fields which did not contain large numbers of nerve and blood cells. In so doing, we probably sacrificed some of the best fields.

The small number of Negri bodies in fixed-virus infection has been, as I pointed out early in my paper, one of the outstanding facts in fixed-virus

infections. The Negri bodies are few in number and very minute in size. As a matter of fact, some investigators have doubted that true Negri bodies occur in fixed-virus infection, maintaining that the minute structures observed are not typical Negri bodies.

In answer to Dr. Schofield's question, it is, of course, a well-recognized fact that in street-virus infection the Negri bodies are found most numerous in the latter stages of the disease. As previously pointed out, in preparations from rabbits dead of fixed-virus infection, or in the late stages of the fixed-virus disease, Negri bodies are very rare. Now, as to our findings in the brain-tissue preparations from the rabbits destroyed 72 hours subsequent to infection with fixed-virus, we want to avoid what might be looked upon as far-fetched conclusions. However, to theorize a little, we feel that the situation might possibly be explained as follows: We presume the Negri body, occurring in various sizes, from ultramicroscopic to the very large forms, to be the cause of rabies. In the brain tissue of rabbits dead of fixed-virus infection, the ultramicroscopic and minute forms occur, possibly because of the rapid course of the disease in such type of infection. Now then, when such fixed virus is injected into a rabbit, it occurred to us that the various minute bodies thus injected, might immediately start to develop in the favorable areas of the nerve tissue, and then later produce their progeny. We feel that possibly the large forms noted in the 72-hour preparations were not forms originating from the virus introduced but were later stages of the initial virus, and that such bodies would later produce progeny in sufficient numbers and of such character as to produce the disease. In fixed-virus infection, it is possible that, because of the rapid course of the disease, the progeny of the virus originally introduced do not have time to develop into the larger forms but are present as ultramicroscopic and barely visible forms. On the other hand, with street-virus infections, the presence of the large forms of Negri bodies may be due to the longer course of the disease, the progeny of the infecting virus having more time to develop.

As Dr. Schofield pointed out, if the Negri body is an area of cell degeneration, the process should be more marked at the end of the disease than at the seventy-second hour. Such is not the case.

So far as the Negri bodies in "dumb" rabies go, I cannot say just why you find that Negri bodies are scarce in that type of the disease.

Regarding Mr. Whittlesey's question as to the infectiousness of the saliva previous to the time that an animal develops the disease, it has been definitely shown that the saliva is virulent from two to five days previous to manifestations of symptoms. In going through the literature on that point, I found some work reported, I think by someone from the Pasteur Institute, in which it was proved that the saliva was virulent eight days previous to the manifestation of symptoms; but that is unusual.

As to Dr. Pickens' question, I might say that we have started some work along the line indicated, but have no results to report at this time.

HANDBOOK ON FEEDING

Veterinarians in every agricultural section of the country should be interested in the new publication, "A Handbook for Better Feeding of Live Stock," just issued by the United States Department of Agriculture, as a part of a recently organized service for better feeding methods. This booklet contains in condensed form practical and up-to-date information on the feeding of cattle, hogs, sheep, horses, and poultry, compiled as a result of a country-wide study of farm feeding problems. Copies of the handbook, which is known as Miscellaneous Circular 12, may be obtained free, as long as the supply lasts, by addressing the Department of Agriculture, Washington, D. C.

PROPHYLACTIC RABIES IMMUNIZATION BY THE ONE-INJECTION METHOD

By A. EICHHORN *and* B. M. LYON

Pearl River, New York

It is a recognized fact that the dog is the primary factor in the propagation and dissemination of rabies, and therefore the elimination of the disease from the dog would naturally tend to control and eradicate the disease. Measures of quarantine and muzzling, which have been practiced in practically every country where rabies is prevalent, have not effectively prevented the spread of the infection, nor did such measures even markedly diminish the number of cases in localities where the disease prevails.

Effective vaccination against rabies has been practiced ever since the epoch-making discovery of Pasteur. Many modifications have been developed, but, in all instances, a series of anywhere from 14 to 25 injections is required to confer protection to the individual. These vaccinations have been more or less limited to persons exposed to the infection through bites by rabid dogs or other animals, and only in exceptional cases have they been utilized for the protection of animals which have been exposed to the disease. The modification of the Hogyes method (dilution method), requiring six injections, has been quite extensively employed for the vaccination of animals which have been exposed to the infection, and markedly good results thus obtained with this method. The statistical data is available now on over 15,000 such vaccinations on different species of domestic animals, with only one and one-half per cent of failures. These are splendid results when we come to consider that in many cases the treatment was undertaken a considerable time after the exposure of the animals.

Any methods necessitating several injections in order to produce immunity could not be recognized as a practical procedure for the immunization of such animals which were not exposed to the disease through bites from infected animals, and it would require a much simpler procedure to popularize it with dog owners in order that they may be induced to protect the dogs against the disease by periodical vaccination.

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The very thorough and extensive investigations of Umeno and Doi have proved that it is possible, by a single injection of a specially prepared vaccine, to produce an immunity which would protect animals against even artificial infection with street virus. This method has been applied extensively and most successfully in practice in Japan.

According to the original report of Umeno and Doi, 31,307 dogs were vaccinated in the Prefectures of Kanagawa and Tokio, with the results that only one animal died from accidental causes following vaccination, and in only one case did the vaccination fail in producing a sufficient immunity against natural exposure. On the other hand, the disease continued to rage among the unvaccinated animals. The vaccination in these two prefectures resulted in a 75% reduction in the number of cases of rabies, the disease occurring only in the dogs which were not immunized.

The laboratory experiments have also conclusively established the safety and potency of the vaccine. The vaccine is prepared by collecting and grinding the brain and spinal cord of a rabbit in which rabies developed in seven days from the injection of fixed virus. To this amount four times its volume of phenolized, glycerin-saline solution is added. The glycerin-saline solution consists of sixty parts of glycerin to forty parts of normal salt solution containing 1.25% phenol. This mixture was called the original vaccine, and was stored at room temperature of 18° to 22° C. for two weeks, or in an ice chamber 30 days to reduce its virulence. When first used, this vaccine was diluted to one-twentieth, but later it was given in a dilution of 1 to 4, that is, in its original strength. This vaccine can be stored much longer than ordinary rabies vaccine, and from data available it will remain active two to three months at room temperature.

When the experimental work was done, the dosage ranged from a fraction of a cubic centimeter up to six cubic centimeters, and the number of injections from four to one, and a dilution of from one-twentieth to one-fifth of the original vaccine to the concentrated original vaccine itself, which is diluted to one-fifth or 1 to 4. It was finally established that one injection of five cubic centimeters per 15 kilograms weight of one-fifth dilution should be used, and that for puppies of 4½ kilograms or less, three cubic centimeters should be given.

The results obtained in Japan were so conclusive and the experimental data so convincing that the authors undertook a

series of experiments to determine whether all the claims made could be substantiated. First, it was undertaken to establish more accurately the duration of immunity induced by such vaccination, and also the relation of the age of the vaccine to the degree of immunity produced. In the April, 1922, issue of the *Journal of the American Veterinary Medical Association*, the authors published the results of a single immunization experiment on dogs, which fully confirmed the results obtained by the Japanese investigators. Since that time the experiments outlined for this work have been completed and tabulated.

The dogs employed in these experiments were obtained from various pounds, but were not selected as to age or breed. They, however, were selected for the respective experiments as uniform in size as was possible under the circumstances. Toward the conclusion of the experiments, as noted from tables IV and VI, only four and five dogs were used respectively, due to the fact that scabies developed among the animals, and, in spite of careful treatment, some of the animals died, as a result of which a smaller number of vaccinated dogs was available for the last experiments. In the preliminary experiments the writers found that it is very essential to employ for the infective inoculations of the dogs a street virus of a somewhat modified virulence which has been successfully obtained by employing a virus which was glycerinated from three to six weeks. The medullae oblongatae of dogs, proven infective, obtained either from outside sources or from our own control animals, were placed in glycerin. For infective purposes small sections from the glycerinized medullae of different dogs were cut with a scissors into fine segments and thoroughly ground in a small amount of saline solution in a mortar. More solution was gradually added until about 10 cubic centimeters were added to one gram of the brain material. This suspension was then filtered through a double layer of cheese-cloth and used for injection purposes.

All infective injections were given intraocularly, the puncture having been made at the juncture of the cornea and sclera into the anterior chamber of the eye; thus the flow of the virus into the eye could be readily followed. Immediately after withdrawal of the needle slight pressure was exerted upon the point of injection to prevent the escape of any of the aqueous humor. Only in two instances did we note a permanent injury to the eye from this injection. As a rule the absorption is very rapid,

and the eye invariably clarifies within two to three days following the injection.

All dogs were vaccinated in the routine manner by injecting the vaccine at two points under the skin of the shoulder and neck. We have not observed a single instance in which any ill effects followed the administration of the vaccine. The control dogs were placed in special individual cages, whereas all vaccinated dogs for each experiment were kept in one pen. As recorded in the tables, all control dogs developed the disease in the majority of cases from 15 to 17 days, which proved that the injected dose of the street virus was of sufficient virulence.

The diagnosis of rabies in all animals was verified by microscopical findings and inoculation of rabbits. All vaccinated and subsequently infected animals were kept alive for a period of six months, when they were destroyed.

The writers have aimed in conducting the experiments to exercise the greatest care and precautions. A special attendant was also provided to care for these animals, in order that they might be carefully observed.

The effectiveness of the vaccination, as indicated in the tables, is apparent. All vaccinated dogs with the exception of

TABLE I—RABIES IMMUNIZATION TESTS 25 DAYS FOLLOWING VACCINATION

Dog No.	Date Vaccinated	Amount Injected Subcut.	Lab. No. Vaccine	Street Virus Injected Intraocularly	Amount	Results
1	10/4/21	5 cc	16	10/29/21	0.05 cc	Living
2	"	"	"	"	"	"
3	"	"	"	"	"	"
4	"	"	"	"	"	"
5	"	"	"	"	"	"
6	"	"	"	"	"	"
7	Control			"	"	Died 11/13/21 R.*
8	"			"	"	" 11/14/21 "
9	"			"	"	" 11/15/21 "

*R = Rabies.

TABLE II.—RABIES IMMUNIZATION TESTS 3 MONTHS FOLLOWING VACCINATION

Dog No.	Date Vaccinated	Lab. No. Vaccine	Date Prepared	Amount Injected	Street Virus Injected Intraocularly	Amount	Results
1	11/15/22	67V160	10/17/22	5 cc	2/20/23	0.05 cc	Living 5/6/23
2	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"
7	"	"	"	"	"	"	"
8	"	"	"	"	"	"	Died 3/1/23 **
9	Control				"	"	Died 3/6/23 R.*
10	"				"	"	" 3/10/23 "
11	"				"	"	" 3/22/23 "

**Pneumonia the cause of death.
*R = Rabies.

TABLE III.—RABIES IMMUNIZATION TESTS 7 MONTHS FOLLOWING VACCINATION

Dog No.	Date Vaccinated	Lab. No. Vaccine	Date Prepared	Amount Injected	Street Virus Injected Intraocularly	Amount	Results
1	10/24/23	67V160	10/17/23	5 cc	5/24/23	0.05 cc	Living
2	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"
7	"	"	"	"	"	"	"
8	Control				"	"	Died 6/14/23 R.*
9	"				"	"	" 6/11/23 "
10	"				"	"	" 6/17/23 "

*R = Rabies.

TABLE IV—RABIES IMMUNIZATION TESTS 12 MONTHS FOLLOWING VACCINATION

Dog No.	Date Vaccinated	Lab. No. Vaccine	Date Prepared	Amount Injected	Street Virus Injected Intraocularly	Amount	Results
1	10/22/22	67V160	10/17/22	5 cc	10/5/23	0.05 cc	Living
2	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"
4	"	"	"	"	"	"	Died 10/22/23 R.*
5	Control				"	"	Died 10/18/23 R.*
6	"				"	"	" 10/21/23 "

*R = Rabies.

TABLE V—RABIES IMMUNIZATION TESTS WITH 3-MONTHS-OLD VACCINE

Dog No.	Date Vaccinated	Lab. No. Vaccine	Date Prepared	Amount Injected	Street Virus Injected Intraocularly	Amount	Results
1	5/3/23	67V172	1/23/23	5 cc	5/24/23	0.05 cc	Living
2	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"
6	"	"	"	"	"	"	"
7	"	"	"	"	"	"	Died 6/12/23 R.*
	Controls**						

*R = Rabies.

**The experiment recorded in the above table was carried out simultaneously with the one recorded in table III. The same infective street virus was used for all dogs in tables III and V and therefore the controls of table III served also as controls for table V.

TABLE VI—RABIES IMMUNIZATION TESTS WITH 6-MONTHS-OLD VACCINE

Dog No.	Date Vaccinated	Lab. No. Vaccine	Date Prepared	Amount Injected	Street Virus Injected Intraocularly	Amount	Results
1	8/6/23	172	2/4/23	5 cc	8/27/23	0.05 cc	Living
2	"	"	"	"	"	"	"
3	"	"	"	"	"	"	"
4	"	"	"	"	"	"	"
5	"	"	"	"	"	"	Died 9/14/23 R.*
6	Control				"	"	Died 9/12/23 R.*
7	"				"	"	" 9/13/23 "

*R = Rabies.

three withstood the intraocular injection of the virulent, street virus. It must be further considered that dogs under natural

conditions would not be exposed to such large amounts of virus as used in this experimental work.

An interesting observation was made in connection with the development of the disease in one of the control dogs in table II. This dog, not having shown any signs of rabies up to the twentieth day after receiving the injection of virulent virus, was placed in the pen with the seven vaccinated dogs. On the twenty-eighth day after the infection he showed the first indication of rabies, and within a few hours developed a furious attack, during which he bit every animal in the cage, some of them quite severely. Sixteen hours after the initial symptoms paralysis became very marked, convulsions followed each other with great frequency and death resulted in thirty-six hours from the onset of the disease.

We anticipated the additional exposure of the seven vaccinated dogs, through the bites of the rabid dog, and although we did not expect that this would induce the development of the disease, due to the fact that all of these dogs received the fixed virus, nevertheless it was deemed interesting to subject these animals, if possible, to such additional exposure. All the vaccinated dogs, however, remained in good health, showing that the vaccination protected them not only from the artificial inoculation with the virus, but also from the additional exposure of bites from the rabid dogs.

As shown in table VI, another of the vaccinated dogs developed rabies, and, as before stated, the vaccinated dogs all being kept together in one pen, the natural sequence happened. This one rabid dog was a very large Airedale, much larger than the other four, and while in the furious stage of the disease he bit each of the other four dogs badly. The whole four of them were smeared with blood, two having their ears split and the other bitten badly about the head and legs. In spite of this additional exposure, none of the four dogs developed the disease, which is again proof that the vaccination will protect against both the natural and artificial infection.

Experience in practice with the vaccination against rabies by the single-injection method has also confirmed the experience gained from the experiments. Thus far they include statistics on about 25,000 dogs which have been given the single vaccination against rabies. None of these animals developed the disease. It should be considered, however, that no data is available to establish how many of these animals were exposed to the disease.

Conclusive evidence has been furnished in several instances where vaccinated dogs were bitten by known rabid dogs without developing the disease. Thus, the *New York State Journal of Medicine,* in the May, 1923, issue, cites cases from Connecticut in which vaccinated dogs have been bitten by a rabid dog and none has developed rabies, and also an incident when a known rabid dog bit two unvaccinated dogs and one vaccinated dog. The two unvaccinated dogs developed rabies, and the vaccinated dog did not develop the disease. The results in practice are significant, especially so as the vaccinations were undertaken principally in localities where rabies was prevalent.

The advantages of an effective, protective vaccination against rabies are of great importance, not only from an economic and police standpoint but also for public health reasons.

YE ANCIENT VET

In olden days, when violet rays
And serums were unknown;
The "Vet" chewed Climax and told big yarns,
While exuding odors of the livery barn.
Prating of prowess and wide renown
That even extended to the neighboring town;
Of successful practice, with clamp and shears,
As he treated himself with dark brown beers.
If you had a sick cow he could relieve her
With aloes, oil or nitrous ether.
He expelled the bots from their nice warm lair,
With turpentine and chopped-up hair.
"Wolf in the tail" and "hollow horn"
Were mysteries that caused him to look forlorn;
While with "water colic" that caused unrest,
He treated with nitre and appeared at his best.
The "profession" to him was but a trade,
The foundation of which was laid
In legend and mystery handed down;
Only to be grasped by minds profound.
Shot-gun prescriptions, and obnoxious mixtures
Of deadly nostrums and potent elixirs.
But at that I wonder, if our educated blunders,
Aren't just as bad or worse.

W. C. NYE.

Boise, Idaho.

LOS ANGELES COUNTY, CALIFORNIA, ADOPTS ANTI-RABIES VACCINATION ORDINANCE

By T. H. EDWARDS, *Pasadena, Calif.*

Director of Rabies Control, Los Angeles County Health Department

Los Angeles County, including the city of Los Angeles and some thirty or more other municipalities, reported 808 positive cases of rabies during the year 1923 among dogs and other domestic animals and nine human deaths resulting from bites of rabid dogs.

Due to the mild climate and unusual liberty permitted the dwellers in Southern California, where each citizen lives in a yard of his own, the disease occurs just as unabated in December and January as in July and August. Almost every family has a dog, a large percentage of which are of the better class, and each one is allowed as much freedom of movement as possible. Among the one million and a quarter of people in the county there are approximately 50,000 dogs, 20,000 of which are in the city of Los Angeles alone. The incidence of the disease and its menace to the public health have become so great and the apprehension produced by it so terrifying that the Board of Supervisors of the county were stirred to action and passed an ordinance on December 24, 1923, requiring that every dog going free on the public domain must be immunized against rabies by treatment with rabies vaccine (canine).

Dr. J. L. Pomeroy, County Health Officer, Los Angeles County, was charged with the duty of eradication of the disease and pursuant to that end he has put the burden of the task upon the shoulders of the veterinary profession of Los Angeles County and has deputized every veterinarian licensed under the Veterinary Practice Law of the state of California as an assistant. The county will be divided into zones with pound organizations located centrally in each zone. Lay quarantine officers will make a census of the dogs and require each owner to present his dog to a veterinarian for immunization, after which the county will issue serially-numbered tags indicating that the dog has been so treated. At a given date, ninety days after notice to start immunization each year, quarantine will be placed on, and a clean-up made of all unvaccinated and stray dogs. It is hoped that within two years rabies among domestic dogs, will have

been so controlled that a campaign of extermination of the coyotes in the mountain districts of the county, among which rabies is enzootic, may be put on and thus terminate the menace to the public health.

Although not the pioneer in anti-rabies immunization in this country, it is anticipated that the movement inaugurated in Los Angeles County is one of the first really large propositions in the modern method of rabies control. That the members of our sister medical profession, through a high ranking public health officer, has recognized our Veterinary Medical Association and the veterinary profession as the back-bone of the campaign, is a high compliment to our professional efficiency and a tremendous stimulus to the individual practitioner to do his patriotic bit in the interest of his country and the public health.

In the passage of this ordinance four new veterinary positions have been created at substantial salaries, a Veterinary Director and three Assistant Veterinarians being authorized, thus placing the work as nearly exclusively a veterinary activity as possible in a health department subordinated only to the County Health Officer.

The Veterinary Association of Southern California unanimously passed a motion, at its December meeting, establishing a uniform fee for anti-rabies vaccination at $2.50, thus publishing to the public that the ordinance passed was not a political gouge to enrich the practitioner, a cry so often heard from the anti-vivisectionist, anti-vaccinationist and all of the other anti-cults and isms.

That we, as a profession, merit the trust imposed in us in carrying out this very important health measure is obvious and it is hoped that every member will strain to his professional utmost to eradicate the dread disease of rabies, thus rendering our beloved profession less hazardous in earning our daily bread.

A CORRECTION

Dr. James W. Benner desires to direct attention to an error which crept into the manuscript of his paper, "Immunizing Young Pigs Against Hog Cholera," published in the January issue of the JOURNAL. In table I, on page 467, in the box-head at the top of column 4, the time should be "5 months, 3 weeks" instead of "3 months, 3 weeks," as printed.

ACUTE PARENCHYMATOUS MASTITIS, WITH SPECIAL REFERENCE TO ETIOLOGY AND PATHOLOGY[1]

By G. E. JORGENSON, *Clermont, Iowa.*

Acute parenchymatous mastitis is a disease of considerable importance both economically as well as a problem of public health. It annually causes monetary losses of considerable import by its destructive effect upon the organs of lactation. Equally, if not more important, is the possibility of its transmission to human consumers of milk. An example of this nature is had in the epidemic of streptococcic sore-throat in Portland, Oregon, in 1922, in which 487 cases with 22 deaths were traced to a single dairy in which a cow was suffereng from streptococcic mastitis which had without doubt been transmitted to the gland from the hands of one of the milkers who was suffering from sore-throat due to a streptococcus identical to the one isolated from the cow and from the patients affected during this epidemic.

ETIOLOGY

The predisposing factors of a mammary gland infection are not dissimilar to predisposing factors in other infections. Most of the pathogenic organisms are able to produce an infectious, parenchymatous mastitis. However, the organisms that are usually found are in the following order of frequency: Streptococci, staphylococci, colon bacilli, *B. tuberculosis* and *B. pyogenes.*

It is possible that in some instances the organisms arrive at the mammary gland via the blood stream, yet it is probable that by far the most frequent avenue of entrance is the teat canal. The source of the invading organisms varies. I have noted a correlation, as it were, between the organisms found in septic genital infections and those found in cases of mastitis in the same herd. In mastitis due to streptococci of human origin it is no doubt transmitted by an infected milker, while the source of colon bacilli, staphylococci, etc., needs no explanation.

Records of etiological studies by the writer over a period of six years covering 44 cases show the following organisms and their frequency:

[1]Presented at the sixtieth annual meeting of the American Veterinary Medical Association, Montreal, Canada, August 27-31, 1923.

Alpha-type streptococci	30 cases
Beta-type streptococci	4 cases
Staphylococci	2 cases
B. coli communis	3 cases
B. coli communior	2 cases
B. pyogenes	1 case
B. tuberculosis	1 case
Actinomyces bovis	1 case

In one case where a Beta-type streptococcus was found in pure culture the owner's children were suffering from a streptococcic sore-throat. In one case where *Staphylococcus albus* was isolated the owner who did the milking was affected with a *Staphylococcus albus* abscess of the wrist. In summing up the etiological factors of acute parenchymatous mastitis it can be said without fear of successful contradiction that streptococci are by far the most frequent invaders and incidentally the most dangerous, for the reason that bovine streptococci are potentially virulent for human beings and in the ordinary routine practice it is difficult for the practitioner to ascertain whether he is dealing with an infection of human origin or one of more lowered virulence of bovine origin.

Pathology

My classification of the injury produced may be somewhat arbitrary so far as the usual classification is concerned. I consider acute, parenchymatous mastitis as a purulent phenomenon, and limit the classification to the tissue attacked, that is, to acute, parenchymatous mastitis or chronic, interstitial mastitis. The end-results vary. There may be a resolution and regeneration of the destroyed parenchymatous tissue, if the process is limited, or, if extensive, a replacement with connective tissue of fibroblastic origin. In cases where the process is extensive, with saturation of the tissue with powerful toxins, the end-result may be one of local necrosis, together with grave systemic toxemia.

I have never had the opportunity of seeing the lesions of acute, parenchymatous mastitis shortly after its inception. Such cases as have come to necropsy, or such materials as have been available for study following surgical removal, have always been from cases of some length of duration. The lesions noted have been the usual, retrograde changes seen in any destructive process of glandular tissue. The lesions vary from simple,

granular degeneration, at one end, to necrosis and exfoliation at the other extreme. A section under the microscope on the table before me shows exfoliated necrotic cells, cells showing pyknosis, karyorrhexis and fat, together with an infiltration with polymorphonuclear leucocytes, some of which contain cocci. There is a fibrinous exudate and intense congestion of the adjacent vessels. This is from a case of Alpha-type streptococci, which died on the eighth day, from systemic toxemia. The milk showed exfoliated cells, fibrin and leucocytes and when allowed to stand settled into two strata, one of which was pus. Sections from the kidneys, heart, liver and mammary lymph-glands showed an acute parenchymatous nephritis, cloudy swelling of the heart muscle and liver and hemorrhagic infiltration of the lymph-glands. Cultures from the blood and tissues named were negative, indicating that the fatal issue was due to a toxemia rather than bacteremia. The gross lesions of mastitis are so apparent and so well known that it would be a waste of time to describe them here.

Symptoms

The clinical manifestations of mastitis vary, depending upon the extent, cause, resistance of the host or virulence of the invading organism. In mild cases, where the involvement is limited, the invading organism of low virulence and the animal resistance high, the clinical manifestations may be limited to a low-grade inflammation, with the associated changes in the constituents of the secretion. This picture changes as the other extreme is approached, to one of an intense inflammatory reaction, with the secretion greatly lessened and containing large amounts of pathological exudates and tissue debris, together with extreme systemic symptoms due to absorption of toxic material or even the infectious agent itself. Either one or all of the quarters may be involved. However, when more than one quarter is involved it is my opinion that the infectious material gained entrance through the teat canal, rather than affecting the adjacent quarter by continuity. In other words, unless the process is extremely malignant and the adjacent connective tissue saturated with the infecting organisms, I do not believe that one quarter is affected from another. This belief has recently been strengthened by the work of Dr. Theobald Smith, working with *Bacillus abortus*. His work indicates that when *B. abortus* was injected into a quarter the production of agglutinins was limited to that quarter.

Treatment

While this paper has to do primarily with a brief discussion of the cause of mastitis and the basic lesions thereof, it would not be fitting to close this paper without a brief discussion of prophylaxis and treatment, for the reason that although the etiological factors and anatomic lesions are of importance to the practitioner, it is really the prevention and cure that he is primarily interested in, and a brief discussion of the precedures for prevention and cure will perhaps serve as a stimulus for a general discussion of this phase of the subject.

Prevention of mastitis is the ideal to be sought for. Perhaps the most potent factor in the prevention of infectious mastitis is, as in other infectious diseases, sanitation. Scrupulous cleanliness should be practiced. The environment should be kept clean and each animal at the time of milking should be thoroughly washed. That is, the udder and adjoining parts should be thoroughly cleansed. Milkers should be subjected to a physical examination each month and any one showing evidence of an infectious process should not be allowed to come in contact with the cows. Each milker should be compelled to dress himself in a white suit, washed and sterilized at least every two days. He should further be compelled to wash his hands carefully before milking and after every cow, while any cow showing signs of infection should be isolated from the remainder of the herd and milked by some one who does not need to come in contact with the main herd, or at least such infected cows should be milked last and their milk rejected.

The treatment of mastitis is at best difficult. Therefore no routine treatment has ever held in vogue for any length of time. The administration of formalin has been praised by some. My experience with it has not made of me a very enthusiastic supporter of it. Neither has ether vapor. I positively condemn the practice of injecting antiseptic or germicidal agents into the affected quarter unless it has been surgically drained. To do so is, in my opinion, little short of malpractice. Internal medication is limited to eliminative and supportive treatment. I do not believe that any of the so-called specifics are of great value in overcoming an infectious process in the gland.

Massage of the affected parts, while having been practiced for many years, can not be said to be a rational treatment. One would not massage a boil for the reason that such would tend to

spread the infectious material to adjoining uninfected tissue. The application of cold or heat is splendid if it can be kept up. I have found that the use of bacterins and intravenous administration of acriflavine have been quite satisfactory in my hands and I believe that such treatment, together with proper diet, rest and eliminative and supportive medication, offers the most rational treatment. It is of course understood that withdrawal of the exudate-laden secretion should be practiced, most desirably with a sterile milk-catheter. In such cases as it is indicated, surgical drainage and even ablation of the gland should be practiced.

Chronic Mastitis

Regarding the condition commonly known as chronic mastitis, I believe that this condition is due to an infection obtaining entrance through an abrasion and is limited primarily to the external interstitial tissue, or it may be a retained focal infection following an acute parenchymatous process. Regardless of what its mode of origin is, it is essentially an interstitial involvement, presenting an occasional intermittent attack upon a limited portion of the parenchymatous tissue. Sections of such cases support this view-point, inasumch as the lesion seen is virtually a slow fibrosis, accompanied with a low-grade inflammation. In such cases bacterination proves very efficient, although phlegmonous conditions occasionally occur in spite of such treatment and necessitate surgical intervention.

After all has been said and done, it will be found that individual resistance upon the part of the host plays a most important part. That is evident when one observes recoveries from mastitis after the most charlatanous treatment bordering upon abuse. I have one case, in my system of case records, where, after draining a quarter, I returned on the third day to see the patient and found the entire udder encased in a sack containing bread and milk. When asked to explain this treatment the owner replied that such treatment had been prescribed for him at one time when he suffered from boils and he supposed that it would be equally as efficacious for mastitis. That either he or the cow recovered can be attributed more to a splendid resistance than to the treatment, which was nothing more than a perfect microbian feeding-ground.

I might add here that the meddlesome owner who insists upon using a teat-tube, which he has lubricated with saliva, to relieve such conditions coming under the common vernacular of "hard

milking," and the owner who insists upon adding to the treatment prescribed by his veterinarian, is the primary predisposing factor in many cases of infectious mastitis and the fatal issue of many cases which should recover. As a matter of fact I believe ignorance or shiftlessness on the part of certain owners serves to swell the number of cases coming under observation. It is a very common thing to have an owner tell you, when relating the history of a case of mastitis, that the first trouble was "hard milking" and that he tried to relieve this with an old teat-tube lying in the stable window, or with a piece of straw, a nail or a feather.

COLORS IN DOGS

Colored Maltese inhabit the Island of Malta but only the white variety is seen in England.

A Pomeranian usually changes a little in color, with the change of the puppy coat, between the ages of seven and ten months.

The chief difference between the Esquimaux and the elkhound is that the former is smaller, with white predominating, while the elkhound is mostly grey-sable.

Black tongues, a distinctive mark of the chow, and black noses, which belong to the Pekingese, are sometimes absent in early puppyhood, which is a source of worry to the uninitiated. Generally the black will develop as the dog grows older.

Many Yorkshire terriers are being shown with mahogany tan and very dark back, which is altogether wrong, according to Robert Green, Yorkshire expert of England. The tan should be the sovereign color and in three shades, lightest on head, darkening toward the ear-roots and deeper on the muzzle and feet, toning lighter toward the body. The body color should be blue, not black.

TO REPRESENT VETERINARIANS

At a recent meeting of the Pennsylvania State Veterinary Medical Association, three of its members, Drs. W. A. Haines, Louis A. Klein and Thomas D. James, were delegated to represent said Association in the Pennsylvania State Council of Allied Agricultural Associations, Dr. W. A. Haines being made Director. These appointments were the results of the personal invitation made by the President of the Allied Agricultural Associations before a meeting of the Pennsylvania State Veterinary Medical Association.

UMBILICAL HERNIA IN THE PIG[1]

By W. F. GUARD, *Ames, Ia.*

At the 1920 meeting of the Iowa Veterinary Association, I made a progress report upon the subject of operative treatment for umbilical hernia in the pig and since pursuing that subject further, we have developed a technique which seems far superior to any of our previous methods. Therefore, without going into detailed discussion of the subject of umbilical hernia, I wish to present the technique which we now employ and some of our conclusions.

PREPARATION

In the first place we consider it quite an advantage to operate pigs as early in life as possible, before the ring has enlarged to any extent, and thereby caused any additional atrophy and weakening of the abdominal wall surrounding the ring. If this atrophy and weakening is present, we consider it almost necessarily an incurable case. We have successfully operated upon many pigs weighing from 80 to 150 pounds which had well-defined hernial rings and no tendency towards weakening of the abdominal wall surrounding the ring. However, we prefer pigs weighing fifty pounds or under. The pigs should be starved for at least twenty-four hours before the operation. In discussion the operation it is necessary to describe the technique for both the gilt and male pig, since we have a variation in the anatomical relations.

OPERATION

First, the gilt. The operative field having been thoroughly prepared for operation is anesthetized by injecting a local anesthetic into the skin around the intended lines of incision. An *elliptical* incision is now made through the skin, including as much of the skin as we care to remove with the hernial sac. This eliminates all unnecessary dissection in isolating the sac and also includes any abrasions or abscesses that may be present at the lowest portion of the sac and which can be removed with the sac without contaminating the operative field.

The subcutaneous tissue is now broken down by blunt dissection so that the peritoneal hernial sac is isolated down to the hernial ring. The subcutaneous areolar connective tissue is now dissected away from the margin of the ring for about one inch, so

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that the outer sheath of the rectus abdominus muscle (formed by the fusion of the aponeuroses of the external and internal oblique muscles) is clearly visible around the hernial ring. The hernial sac is now opened in order to free the sac completely of all contents. Occasionally one finds strips of omentum adherent to the sac in and about the ring. The hernial ring is now anesthetized by injecting a ½% solution of a local anesthetic around the base of the ring between the peritoneum and the abdominal floor so that the peritoneum, which is the sensitive structure in this region, will be completely anesthetized. This injection is accomplished by placing the finger in the peritoneal cavity to direct the needle and prevent it from penetrating the peritoneum. It is very important to have this area anesthetized in order to prevent struggling which would force the abdominal content into the sac through the ring as one is attempting to place the sutures.

In male pigs this preliminary technique is slightly different, due to the fact that the prepuce and preputial sac are closely adherent to the peritoneal hernial sac (figure 1). Consequently, these structures must be carefully separated and the sheath and preputial sac removed from the field of operation before one can conveniently proceed further.

We first make a U-shaped incision through the skin, with the two ends of the incision lying on either side of the prepuce and extending an inch or more posterior to the preputial opening (figure 2). This permits us to isolate carefully the prepuce and preputial sac which can then be reflected, as shown in figure 3. A second incision, uniting the two ends of the U-shaped incision of figure 2, is now made so as to include a crescent-shaped island of the skin, which represents the excess skin to be removed with the hernial sac, which is also shown in figure 3. With this explanation of the difference in the procedures of isolating the sac in the two sexes we are now ready to obliterate the hernial ring. Figure 4 shows two mattress stitches (cat gut no. 4) being drawn into position and illustrates our method of obliterating the hernial ring. We prefer the mattress stitch, since it is an interrupted type of suture, which holds the peritoneal surfaces in close apposition and does not completely ligate the hernial sac. (We believe that the complete ligation of the sac, as in the application of the shoemaker's stitch, does not give favorable results in these cases where it is necessary to cover the line of suture.)

After completely obliterating the hernial ring by the required

number of mattress stitches, the hernial sac is then removed close to the line of sutures. The next step consists in uniting the right and left muscle sheaths or fascia, referred to previously in such a manner as to bury completely the stump of the hernial sac. This is accomplished by using the continuous cat gut suture no. 3 or 4, beginning at one end and drawing the ventral surfaces of the right and left sheaths into apposition, exactly as you apply the Lembert stitch in closing the uterus following cesarean section. Figure 5 shows the stitches in position, while figure 6 illustrates the completion of the stitch so that the sheaths of the opposite sides are in direct apposition and the stump of the hernial sac completely covered. This tends to give additional support, relieves the strain and tension upon the deeper sutures without weakening the wall at any point. We now suture the skin with a continuous cat-gut suture as shown in figure 7. Our next step is to cover completely the line of suture with collodion and cotton as in figure 8. This serves the double purpose of protecting the field operation from contamination and also gives additional surface support.

After the dressing has thoroughly dried, the animal is placed in close confinement in a small, clean stall which can be kept clean and dry. Dog kennels with slat bottoms are ideal. The pig should be kept thus confined for at least a week and during this time the diet should be light and laxative. We have tried several other methods of operating and in all others had frequent recurrences. Using the method just described, our results have been very satisfactory in all cases where there is a definite abdominal ring.

Summary of Important Points

1. The hernial ring must be definite.
2. Dieting the animal before and after its operation, together with close confinement.
3. Asepsis.
4. Careful application of the technique as described.

Acknowledgments

The author wishes to acknowledge the cooperation and valuable suggestions of Doctor H. E. Bemis in developing the above technic; also the aid of Dr. H. S. Murphey on the anatomy of the region. The photographs for the pictures used in this article were made by Mr. E. H. Richardson, College Photographer.

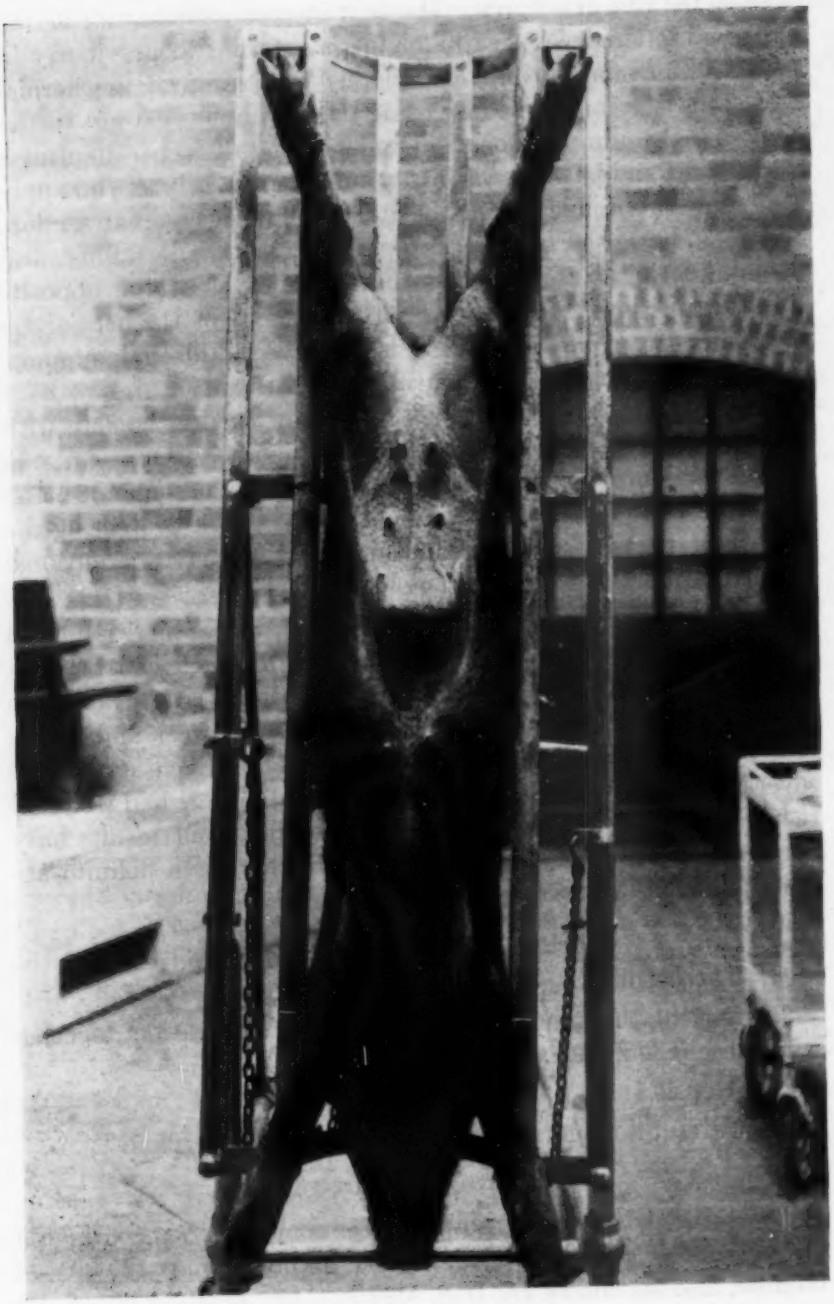


Fig. 1. Umbilical hernia in the male pig.

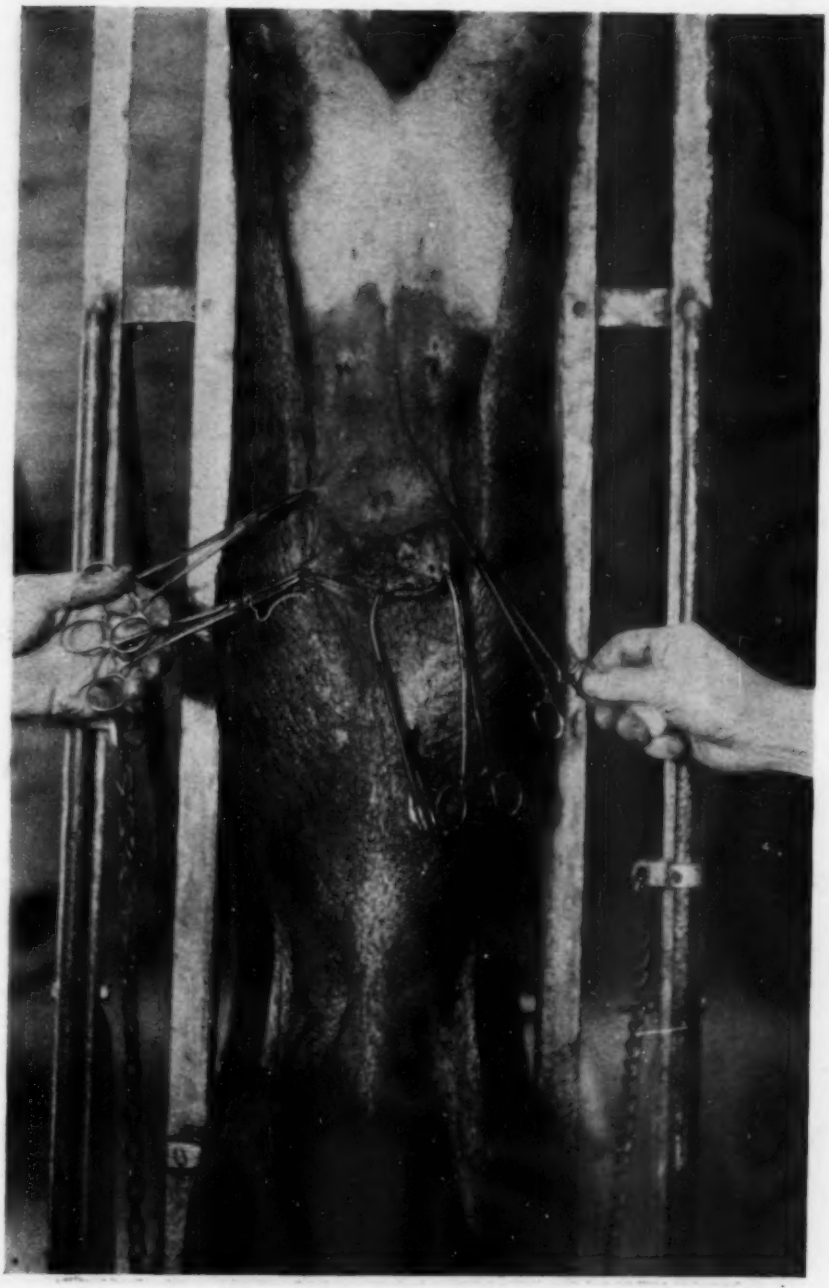


Fig. 2. U-shaped incision isolating the penis and prepuce.

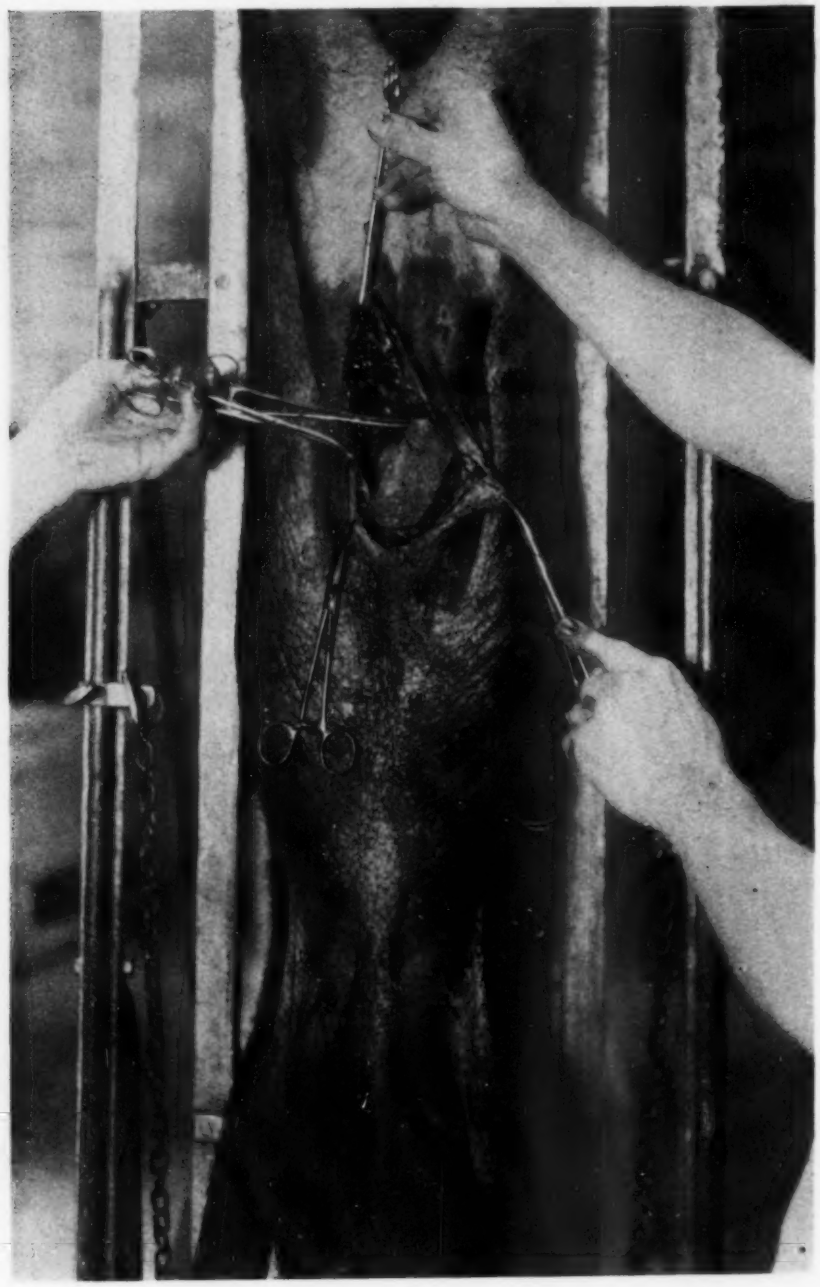


Fig. 3. Prepuce reflected. Peritoneal sac covered by island of excess skin.



Fig. 4. Mattress sutures being placed in peritoneal sac.



Fig. 5. Showing continuous suture placed in the fascia well back on either side and carried over the first line of suture in the sac.



Fig. 6. Showing second line of suture tightened and tied.



Fig. 7. Showing continuous suture in the skin.



Fig. 8. Showing final dressing of the wound.

MOLDS IN SILAGE AND THEIR SIGNIFICANCE IN THE PRODUCTION OF DISEASE AMONG LIVE STOCK[1]

By C. H. Eckles, C. P. Fitch, *and* J. L. Seal

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The use of corn silage as part of the ration for live stock has become a common practice in recent years. The rapid extension of the use of silage and the lack of experience on the part of many of the users have resulted in numerous inquiries regarding all phases of the preparation and use of this roughage.

One of the most common of these questions asked the Experiment Stations concerns the possible danger from feeding silage containing mold. The conditions responsible for the development of molds in the silo are reasonably well understood, and the presence of any considerable quantity indicates proper methods were not followed in filling the silo.

Concerning the possible danger of molds and forage poisoning from feeding moldy silage, little positive evidence has been available. It is not unusual, however, for the owners of live stock and, at times, veterinarians who are called in a professional capacity, to attribute sickness of live stock of an obscure nature to poisoning from silage. As a rule, the possible danger of mold in the silage is emphasized in this connection. Among those who have reported outbreaks of this character are Stange (1911), Beaumont (1909), Pearson (1900), and Rusk and Grindley (1918). Although the evidence is conclusive that in some of these cases the silage was the cause of the sickness, in no case reported is there definite evidence presented indicating a causal relation of mold in the silage. Stange apparently established the relationship of the silage to the death of horses by feeding two animals with suspected silage. Both died within a few days. Rusk and Grindley investigated three cases where sickness in cattle or horses was attributed to silage.

In two of these outbreaks cattle had died, and others showed abnormal conditions. It was not found possible in either case to cause death by feeding the suspected silage to cattle. In the outbreak where horses were affected, it was proved conclusively by feeding tests that the silage would cause the death of horses within a few days when fed in moderate amounts. It was concluded by Graham, who continued the investigation, that it was a case of botulism. In none of these cases where

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positive results were obtained by feeding experiments with the suspected silage, was there any special reason for suspecting the molds to be the active factor.

Church and Buckley have recently carried on a rather extensive investigation of the toxicity of molds for laboratory animals. As a result of their experiments they conclude that (1) "While pure cultures of common, saprophytic molds are not generally toxic when fed to laboratory animals, the presence of mold in forage or in human food is nevertheless an indication of incipient spoilage. (2) By the extensive feeding of laboratory animals, pure cultures of molds common in forage and food products, one, and often the obvious factor of forage and food spoilage, may probably be eliminated from charges of toxicity."

Pathological Properties of Molds

In tables 2 and 3 are listed the molds isolated from the silage fed experimentally, also those found in samples of moldy silage from 19 silos in various parts of the state. So far as we are aware, the only molds in these samples which have ever been suspected of causing sickness in animals are those belonging to the Aspergillus group. Mayo (1891) believed *Aspergillus glaucus* to be the cause of enzootic cerebritis in horses in Kansas. This view was supported by Dalrymple (1893). Pammel says "This organism is not pathogenic, but probably develops a poisonous substance which may produce a disturbance." Although several references are found regarding the possible pathogenic effects of this species, the evidence is by no means conclusive, and other organisms, especially *Clostridium botulinum*, may have been the source of the trouble. *Aspergillus fumigatus* has also been credited with having pathogenic properties appearing in the lungs or bronchial tubes. Bodin and Gautier (1906) also report experiments showing this species has the ability to produce a toxin under suitable conditions, one of which is a neutral or alkaline medium. *Aspergillus niger* has been found in the lungs and in skin infections, but no symptoms are reported in any way resembling those of forage poisoning.

Feeding Experiments

The effect of moldy silage was tested experimentally by us by means of feeding experiments conducted with three cattle, one horse, and two sheep. Beginning in December, 1920, three cattle, a nine-months-old bull, a nine-months-old heifer, and a four-year-old cow, were placed on a ration of moldy silage,

hay, and grain. A statement of the weights and average ration fed is given in table I. This feeding test continued 128 days.

TABLE I—AGE, WEIGHT AND AVERAGE DAILY FEED CONSUMED FOR 128 DAYS

	Guernsey Bull	Holstein Heifer	Grade Shorthorn Cow
Age	9 months	9 months	4 years
Weight at beginning, pounds	440	560	1068
Weight at close, pounds	478	550	1027
Hay per day, pounds	2	2	3.3
Grain per day, pounds	2.3	2.3	5.6
Moldy silage per day, pounds	11.7	12.4	16.1

After the first few days, no difficulty was experienced in getting the animals to eat the ration, in fact the moldy silage was eaten as readily as silage free from mold. The moldy silage used was mostly from silos on the University grounds. Some of the material used contained immense quantities of actively growing molds, developed by inoculating silage with silage molds and allowing several days for development. Small lots of moldy silage received at intervals from various parts of the state were also included. Among these lots from the outside were some suspected of causing sickness in live stock.

Composite samples of the moldy silage fed were made by placing a small portion from that fed each day in a closed container. At the end of from 7 to 10 days the composite sample was mixed and delivered to the Division of Plant Pathology for the purpose of determining the mold flora. The results of these determinations are given in table II. The results of the feeding tests were entirely negative. The three animals remained in perfectly good health during the entire period.

During the winter of 1921-22 a horse and two sheep were fed moldy silage over a period of three and a half months. The

TABLE II—THE FLORA OF SILAGE USED IN FEEDING TESTS

Sample Number	*Penicillium glaucum*	*Penicillium expansum*	*Aspergillus glaucus*	*Aspergillus fumigatus*	*Aspergillus flavus*	*Aspergillus niger*	*Rhizopus nigricans*	*Fusarium sp.*	*Saccharomyces sp.*	*Monascus purpureus*	*Mucor sp.*	*Phycomycete (unidentified)*
20		†	†		††		†	†				†
21		†		††		†		†		†		
22		†			†		†	†				
23	††					†		††				
24		†				†	††		†		†	
25		††			††	†	†	†			†	
26			†		†		††	†				
27	†			†		†		††				
28		††			†		†			†		
29	†	†				†		††				†
30	††		††		†				†			
31		††			††		†	†			†	
32	†				††		†	†				
33		†	†	†		†		††				
34		†			††			†				†
35												
Total	5	10	4	3	9	7	8	11	2	2	3	3

sheep were ewes, each two years old. The horse was approximately 18 years old and in fair condition. With both the horse and the sheep we had difficulty at first in getting the animals to eat the moldy material. Grain was sprinkled over the silage and all other feed removed, before the animals would eat it. Small quantities were fed in the beginning and gradually increased until 10 pounds of moldy silage was consumed daily by the horse and 2.5 pounds daily by each sheep. No injurious effects of any kind could be detected.

In May, 1922, we were asked to make an investigation on a farm near Mora, Minnesota, where the owner had lost five cattle, and the local veterinarian had attributed the trouble to the silage. No sick animals were on hand at the time, removing the possibility of post-mortem examination. The silage suspected of causing the trouble contained no more mold than typical, average silage. It appeared normal in every way. Half a ton was shipped to the Experiment Station and used in a feeding experiment. Two mature cows received from 10 to 60 pounds daily for 13 days, and two others small quantities for a few days only. One cow consumed a total of 427 pounds. No ill effects were noted with any of the four animals used.

Feeding Experiments with Pure Culture

It was realized that the moldy silage, as fed, supplied an immense number of spores and the products resulting from the action of the mold on the forage. However, except in that portion of the silage in which mold was developed intentionally, the amount of actively growing mold mycelia was probably small. It was thought desirable to test further the effect of active cultures of the several species isolated upon the experiment animals.

Cultures were prepared as listed in table IV. These cultures were grown at room temperature on Czapek's solution (liquid). Five cultures, 200 cc each, were prepared of each culture. In from five to seven days a heavy growth had developed on the surface. The cultures were then given on April 21, April 25, May 10, May 17, and June 20, by means of syringe, to the three experiment cattle which had been already fed on moldy silage for 128 days. A careful examination of the animals was made daily during and following the feeding period. Nothing was noted in any way abnormal in respect to the animals' condition. The normal amount of feed and water was con-

sumed, and no evidence was observed of any effect upon the heart or the circulation.

The two younger animals were killed and carefully autopsied July 25, 1921, about a month after the last dose of mold, and no evidence of disease could be found. The older animal was killed and autopsied March 2, 1923. No evidence of the molds could be noted.

In the spring of 1922 similar tests were made with the horse and the two sheep, which had received moldy silage for three and a half months. At this time cultures of all species listed in table IV were used. On April 29, 1500 cc of mixed cultures were given the horse and 250 cc to each of the sheep. The horse was drenched by the use of a bottle and some of the liquid lost. The sheep were given the culture by means of a syringe, after the surface growth had been broken up by grinding with sterile water in a mortar. May 5, 1500 cc of mixed cultures were again given the horse, this time with a stomach-tube, so none of the liquid was lost. The sheep were each given 250 cc of the same mixture by means of a syringe.

May 22, 2,000 cc of mixed cultures were given the horse, and 250 cc to each of the sheep. Careful daily observations during the intervals between doses and following, failed to show any ill effect from the mold cultures.

The horse is still in use and in the best of health. One of the sheep is still living and in good condition; the other, four weeks after the last drenching, developed acute parturient paralysis and died after four days. Careful autopsy and bacteriological study failed to show any evidence of molds as a cause of death. This form of paralysis is not uncommon among sheep in Minnesota.

The Flora of Silage

Table II gives the result of the study made of the flora of the moldy silage used in the feeding tests. It will be noted that most of the molds present were common species known to be harmless. Those of the Aspergillus group are the only species isolated which have been reported to be the cause of sickness in animals, and, as previously indicated, the evidence is by no means conclusive regarding danger from these species.

While the experimental feeding tests were in progress, a study was made of the flora of silage in 19 lots of silage which were not used in the feeding trials and which were obtained from different parts of Minnesota. The results of this study are given in table III. With the exception of nos. 2 and 17, these samples

TABLE III—MOLDS ISOLATED FROM SAMPLES OF MOLDY SILAGE FROM NINETEEN SILOS

Sample Number	*Penicillium glaucum*	*Penicillium expansum*	*Aspergillus glaucus*	*Aspergillus fumigatus*	*Aspergillus flavus*	*Aspergillus niger*	*Rhizopus nigricans*	*Fusarium sp.*	*Saccharomyces sp.*	*Monascus purpureus*	*Mucor sp.*	*Phycomycete (unidentified)*
1	††a	†				†b		†			†	
2	†	†			†			†				
3	†	††				†	†		†			
4		†				††		†				
5		†	†			†	††				†	
6		††		†	†			†				
7	†		†			†	††	†		†		
8		†			††			††				
9		†	†		†	††		†			†	
10				††		†						†
11		†	††						††			
12	††				†		††					
13		††	†	†				†				
14	†				†	††	†					
15					††					†	†	
16	†	†		†			†	†			†	††
17					††			††		†		
18		†	†			†		††				
19				†	†		†					
Total	7	11	6	5	9	9	6	11	2	3	5	2

a†† = predominating species in the samples.
b † = present in samples.

represented silos where mold had developed to a point that the owners were concerned as to the possible danger of using it as feed. Some of the samples were secured from county agents in response to a request for such samples; the others were from the owners direct. Sample 17 was from silage fed on a farm where the death of five cattle had been attributed to the silage. However, mold was not in evidence in this sample. Sample 2 represents silage suspected of having caused the death of sixteen cattle. This silage also appeared perfectly normal, and contained no visible mold.

Table IV gives a summary of the species isolated, and the number of samples in which they were found. This table shows common molds made up the greater part of the flora, and that the species isolated were the same as those from the silage used

TABLE IV—FUNGI ISOLATED FROM MOLDY SILAGE

Serial Number	Fungus	No. of samples from which isolated	
		Silage fed experimentally 16 samples	Survey of moldy silage flora. 19 silos
1	*Penicillium glaucum*	5	7
2	*Penicillium expansion*	10	11
3	*Aspergillus glaucus*	4	6
4	*Aspergillus fumigatus*	3	5
5	*Aspergillus flavus*	9	9
6	*Aspergillus niger*	7	9
7	*Rhizopus nigricans*	8	6
8	*Fusarium sp.*	11	11
9	*Saccharomyces sp.*	2	2
10	*Monascus purpureus*	2	3
11	*Mucor sp.*	3	5
12	*Phycomycete* (unidentified)	3	2

in the feeding tests. This result leads us to conclude that the moldy silage fed was typical of that usually encountered. Most of the samples were so heavily infected with one or two species that frequently it was difficult to isolate other than the predominant forms. Undoubtedly there were molds in some individual samples which were not isolated.

Discussion of Results

As indicated, there is some evidence from the investigations of others that certain of the molds found may be dangerous at times, but the results of our feeding tests do not indicate danger from this source. Furthermore, practical experience teaches that mold in silage is not generally harmful. Many silo owners can recall incidents when live stock have gained access to silage discarded on account of mold and have eaten it freely without any detrimental results. Mold in fact is found more or less in every silo. Even the best preserved silage will show some mold in spots near doors or the walls. The presence of small amounts of mold ordinarily attracts little attention, unless something unusual occurs, for example, sickness among the animals. We have noted that the reports of injury from feeding moldy silage usually come from those with little experience in its use. The tendency appears to be to ascribe any difficulty with live stock, the cause of which is not known, to the silage which is to them an unfamiliar feed. We do not maintain that silage may not be a source of danger to live stock, since the evidence is conclusive that in rare instances it may be the cause of serious sickness, especially to horses. Silage found to have such properties is not necessarily moldy, but may appear to be entirely normal. The investigations of Graham indicate that these cases are botulism rather than the results of mold growth. The presence of mold is no evidence of the presence of *C. botulinum* or its products.

We recommend, as a practical procedure, the discarding of badly molded silage, but the feeder need not hesitate to utilize silage which contains some mold, especially when fed to cattle.

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CLOSTRIDIUM BOTULINUM TYPE C ASSOCIATED WITH A LIMBERNECK-LIKE DISEASE IN CHICKENS AND DUCKS[1]

By ROBERT GRAHAM *and* I. B. BOUGHTON

University of Illinois, Urbana, Ill.

Since Dickens (1918) noted the causative relation of one type of "limberneck" in chickens to the ingestion of canned vegetables containing botulinus toxin, certain chickens showing similar clinical symptoms received at the Laboratory of Animal Pathology and Hygiene have been examined for the presence of the botulinus organism or other related toxin-producing anaerobes. Two outbreaks of avian botulism type A have been encountered in Illinois, independent of the disease in the human family. In one outbreak (1921) garbage was fed, while in the other the poisonous feed could not be established. The type B botulinus organism was isolated (1923) from one of three chickens in a flock showing limberneck-like symptoms, although the primary relation of the type B botulinus poisoning to spontaneous outbreaks of avian botulism, or so-called limberneck, has not been shown in losses coming to our attention. In fact, illness in healthy chickens could not be induced by feeding this as well as other type B strains.

In five outbreaks of a disease affecting poultry which were characterized by lameness, leg, wing and neck weakness, diarrhea and drowsiness, the presence of a toxin-producing, anaerobic, rod-shaped, microorganism indistinguishable from *Clostridium botulinum* type C, isolated by Bengtson, of the Hygienic Laboratory, Washington, D. C., from the green fly larvae, was demonstrated in the intestinal contents or internal organs of one or more of the sick birds. The specific poison in one instance was demonstrated in the gastric intestinal contents. Pure cultures of this anaerobe were isolated from affected chickens in three of the outbreaks, though the suspected feed, other than fly larvae, found in the crop contents of one affected chicken, was not definitely incriminated.

LOCATION OF OUTBREAKS SUGGEST WIDESPREAD DISTRIBUTION OF TYPE C

Naturally affected chickens (2770, 2771, 2772) were received from Drs. Brown and Hinkle, of Decatur, Macon County,

[1]Abstract of Bulletin No. 246, Illinois Agricultural Experiment Station, October, 1923.

Illinois, July, 1921. Eight of the half-grown chickens in this flock died. Specimens (3419 and 3420) were received July 1, 1922, from Mr. John Thomen, Greenup, Cumberland County, Illinois. It was estimated several months later that sixty chickens of this flock died of the disease. The third group of affected chickens (3421, 3422, 3423) was received from Mr. A. E. Davidson, Mt. Sterling, Brown County, Illinois, on July 12, 1922. Twelve mature hens, fourteen half-grown pullets and one duck died in this flock. The fourth outbreak (3466, 3467, 3468) occurred on the farm of Mr. I. L. Durbin, Taylorville, Christian County, Illinois. Fifteen half-grown chickens in this flock died. The fifth outbreak (487) occurred at the University Poultry Farm, Champaign County, Illinois, and while not described in the bulletin, the clinical manifestations and the bacteriologic findings coincide with the aforementioned outbreaks.

Cultural Characters of C. Botulinum, Type C

C. botulinum type C encountered in affected chickens is an anaerobic, gram-positive, non-motile, terminal-spore-forming, rod-shaped organism closely related to, if not identical with, the pathogenic anaerobe isolated by Bengtson from the larvae of the *Lucilia caesar* or greenbottle fly. Subcultures may fail to develop in glucose-agar and even in meat-mash media which is favorable for its development. Some subcultures showing characteristic growth in meat-mash media, and deep agar tubes, may not prove fatal to guinea pigs. The most consistent growth has been obtained in meat media, including lean beef, lean pork, beef liver, and pork liver. In addition to the cultural characters which distinguish type C strains from either A or B strains of the botulinus organism, the poison or toxin elaborated by it is not neutralized by botulinus antitoxins A or B. The symptoms induced in guinea pigs by the toxins of the A, B, and C organisms are similar however. The thermal death-point of type C spores is relatively lower than strains of type A. Fifteen minutes at 80° C. has rendered spore suspensions inert. The soluble toxin elaborated is destroyed in five minutes at 80° C.

Symptoms of Type C Poisoning in Poultry

The mortality in naturally affected flocks has been variable. In two flocks it was negligible, while in another affected flock sixty chickens died. The symptoms in spontaneous and experimentally induced disease are marked by dullness, lameness, weakness and drowsiness. The eyes are closed, and weakness

of the neck and wing muscles becomes apparent as the disease progresses. In advanced cases the head and neck rest on the ground. Diarrhea is often present. About the yard and pen varying quantities of feathers have been noted in seriously affected flocks, while in handling affected chickens the feathers may be easily removed.

Milder forms of the disease are accompanied by inability to walk. Aside from leg weakness, some affected birds in one flock appeared healthy. Sick chickens in flocks, as well as specimens received for examination from two other flocks, failed to show the typical, limberneck syndrome. Spontaneous recovery was reported in affected chickens and observed in certain specimens held under observation at the laboratory.

Susceptibility of Chickens

Healthy chickens under experimental conditions are somewhat resistant to the ingestion of type C toxin, though typical cases of the disease have been induced by feeding the cultures, as well as the culture filtrate elaborated by type C strains obtained from spontaneous cases of the disease. Chickens chronically affected with chickenpox have proved more susceptible than healthy chickens. Relatively large amounts (20 cc) of the culture fed at one time may induce a fatal form of the disease in healthy chickens, though larger amounts are often necessary. Three cubic centimeters of the culture fed daily for a period of ten consecutive days produced a fatal type of the disease in chickens. Similar amounts of the filtrate did not produce symptoms.

Susceptibility of Other Farm Animals

The ingestion by horses of 50 grams of the culture per thousand pounds live weight was sufficient to induce a transitory illness, while 100 grams per thousand pounds live weight terminated fatally. The culture when fed to cattle in amounts varying from 50 to 400 grams per thousand pounds live weight induced transitory symptoms of depression, stiffness, loss in weight, with incoordination of movement. Affected cattle fell to their knees when forced to move. The illness was followed by complete recovery in 3 to 5 weeks. Sheep and goats proved susceptible to the subcutaneous injection of 2 to 5 cc of the culture. Swine, including sows and shotes, proved resistant to the ingestion of massive amounts. Nursing pigs remained healthy while the dam ingested liberal amounts of the culture. In sheep, death

was induced by injecting subcutaneously 1 to 3 cc of the culture.

The illness induced in experiment horses and cattle, by feeding the culture, suggests that these animals are susceptible to type C poison.

Lesions

In chickens that suffered from the spontaneous disease, as well as in chickens artificially infected, a catarrhal enteritis with occasional hemorrhages in the mucosa of the small intestine was found. The amount of toxin ingested is doubtless an important factor in the gross lesions as well as the mortality in the flock. Intestinal parasites were encountered in some naturally affected chickens. The increased susceptibility of chickens suffering from a chronic disease has suggested the possible part played by parasitism or other secondary agencies.

Soil Contamination

Bacteriologic examination of soil samples obtained from several chicken yards on the premises where chickens became naturally affected gave positive evidence in two instances only. Sample of soil from a barnyard where horses died also gave positive results. Isolation of strains from soil has not been accomplished, but the presence of the toxin in the soil cultures was demonstrated by feeding impure, soil-culture filtrates to type-C-protected and to unprotected animals. The relation of type C in soil to the occurrence of the disease in poultry is probably secondary, since type C has been detected in soil on premises where chickens remained healthy.

Antitoxin

An antitoxin of low potency has been prepared from experiment animals (goats and calves) by injecting non-lethal amounts of the culture filtrate. The specificity of the antitoxin in healthy, experiment animals has been shown in the results of experimental tests, but its value in the prevention and treatment of type C poisoning of naturally affected chickens remains undetermined. Antitoxin prepared against the strain isolated from the larvae of *Lucilia caesar* at the Hygienic Laboratory provided a specific protection against the toxins of the strains encountered in four of the outbreaks in chickens described in Bulletin No. 246. A and B antitoxins, however, gave no protection. The three type C strains isolated from poultry were used in preparing an antitoxin. Each protected against the homologous and heterologous strains and the fly larvae strain of Bengtson, as well as

against toxic larvae submitted by Dr. E. W. Saunders, of St. Louis, Missouri.

Parabotulinus of Seddon Resembles Type C

Through the kindness of Dr. J. W. Buxton, Research Council, London, England, a culture of parabotulinus of Seddon was obtained for comparative study. Cultural and pathogenic characters observed to date suggest that the parabotulinus strain is closely related to American type C strain. The type C antitoxin prepared from three different type C strains protects guinea pigs against lethal amounts of the parabotulinus culture of Seddon. A and B botulinus antitoxins fail to protect against the parabotulinus toxin.

HORSES AND FARM POWER

The United States Department of Agriculture has recently investigated the relative advantages of horse power and motor power for farm operations and reports numerous reasons for the continued use of good draft horses. Horse power is characterized by its versatility and adaptability to perform various farm operations. The horse is not limited either by the topography of the ground or a specialized ability to perform only a few farm tasks economically.

The horse is self-replacing, earns its keep, and increases in value up to the marketable age. Mares enough may be bred yearly to replace the mature stock which is marketed. The young horses raised under this plan continually increase in value and at the same time they are paying their way by doing the farm work.

Keeping horses also helps to conserve the fertility of the soil and provides an element of interest which helps to keep the youngsters on the farm. Then too, there is less direct cash outlay for horse power, as horses consume home-grown feed chiefly.

Motor power, however, has advantages under certain conditions and in many cases the two forms of power—horses and tractors—are both used.

SWINE FLU AND ITS COMPLICATIONS[1]

By C. C. HASTINGS

Williamsville, Ill.

Swine flu is an acute, contagious pneumonia of swine. It was recognized as a separate and distinct disease by veterinary practitioners in Illinois in the fall of 1916. At that time it was called contagious pneumonia and looked upon as a condition of little importance. However, as we study it more, we find that swine flu itself is not only a serious menace to the hog-raising industry, but its complications are fast depleting our pure-bred herds and making inroads in the grade herds.

OCCURRENCE

Swine flu occurs most extensively in the large, hog-raising states of the Central West, more especially in the pure-bred herds that exhibit at the various state and county fairs. It is observed in swine that are from three months to one year old, but may occur in small pigs or even mature animals, its course being lighter in aged hogs.

Evidently, climatic conditions play only a small part in the occurrence of swine flu, it being as prevalent during the summer months as during the winter. It is met with more frequently during the fall, due, no doubt, to the shipment of breeding animals to and from the different exhibitions. Also, to the practice of many breeders to purchase breeding stock, more especially boars, from show herds that have been immediately previously or at the time on the show circuit. This practice should be discouraged.

Swine flue is to be looked upon as a highly contagious disease and treated as such. It is an almost daily occurrence in the fall of the year for veterinary practitioners to be requested to administer to herds bearing the history of previous exposure through the show circuit. Of course, many sporadic cases appear that have no history of exposure. The same can be said of all swine diseases, including cholera.

ETIOLOGY

To my knowledge the etiological factor of swine flu has not been determined, but from all appearances it evidently is a

[1]Read before the McLean County Veterinary Association, at Bloomington, Ill., November 20, 1923.

specific infection. Such theories as drafts, overfeeding, exposure, shipment, etc., can be considered only as predisposing causes.

Symptoms

The period of incubation is five to seven days. A slight dullness and tucked-up appearance is noticed. The animals cough, often a loud, coarse, dry cough that can be heard for some distance, being more pronounced when they first get up. A characteristic wavy thump is present. Food is refused. Temperatures of 105° to 106° and higher at times. The course of the disease is about five days. When it subsides, the animal apparently is no worse off from its experience except the loss of flesh. About 98 per cent of affected pigs recover; the other 2 per cent die from pneumonia.

Swine flu should not be confused with the benign, thumpy condition caused by shipment, overfeeding, exposure, etc., often seen following the first cool nights in September and October. This condition can be differentiated from swine flu by its benign character and short duration, usually two to three days.

Control

Quarantine and isolation. Separate sick from healthy hogs. All animals purchased, as well as those coming off the show circuit, should be held in quarantine fourteen days before being placed with the herd. It has been found that fourteen days after recovery they will not spread the disease. There have been cases where an animal turned into the herd ten days after recovery spread swine flu to the rest of the herd.

Complications

The complications of swine flu are many and varied. They include abortion, pig scours and chronic pneumonia.

Abortion: It has been estimated that on the average 25 per cent of gilts that apparently recover from flu abort at some time during their first pregnancy following. A large percentage that carry their litters up to time, farrow pigs that are known as "squealers." Such pigs have fine, silky hair, are weak, and have a premature appearance. They squeal, wander around the sow, and are not inclined to suck. Many of them die within forty-eight hours.

Scours: Those that survive the first few days usually scour. The feces are thin, at first brown in color, later becoming light.

Pig scours of this character is seldom if ever controlled. Dieting the sow is of some value.

Chronic pneumonia: For want of a better term, chronic pneumonia is used to designate a cold, chronic progressive pneumonia that is the most serious complication of swine flu. It is seen in pigs farrowed by sows that have apparently recovered from an attack of flu before they were bred.

The pigs that survive abortion and scours look almost normal the first month. Then several "bad doers" are noticed. At two months of age it is a "bad doing" herd. Thumps are often observed, eyes bright, appetite good, temperature normal, emaciation and anemia marked. Clinically they resemble wormy pigs. Autopsy reveals chronic, solidified areas in the lungs, on cut surface resembling liver with fibrous tissue intermixed, the alveoli being entirely obliterated. To the touch they are firm. It is a question if the lesions are the result of a previous inflammation or are of a progressive nature.

In view of the fact that in these herds hogs die constantly from one month to one year of age, it would resemble more of a progressive pneumonia. When vaccinating swine against cholera, it is imperative that this condition be not overlooked, for at no time during the life of hogs affected with chronic pneumonia is it safe to give them hog cholera virus. Chronic pneumonia is directly responsible for many of the serum breaks. If it is necessary to vaccinate such a herd, the owner should always be warned that trouble may be expected. It is a recognized fact that more post-vaccination trouble is met with in pure-bred than grade herds. Also more chronic pneumonia is seen in pure-bred herds.

Case Report

This case report is recited here because it is typical of the condition seen in the field.

In October, 1921, eighty pure-bred Duroc-Jersey gilts, eight months old, and five young boars were purchased. The gilts and boars came from two separate farms, but were shipped in the same car a distance of sixty miles. Six days after arrival, the gilts were noticed to be sick, and a diagnosis of swine flu was made. The original owner of the gilts denied any presence of the disease on his farm. The original owner of the boars admitted that they had been exhibited at the State Fair (Spring-

field, Ill.) and had recovered from the flu but a few days previous to the sale. Evidently they were still spreading the infection.

The gilts apparently recovered, and were bred in November. The following February six aborted. In March they farrowed, and no accurate record was kept of the number of pigs born alive. It was estimated that 460 pigs were farrowed, eighty or ninety being dead. Some were born with scours, and every litter was affected more or less with scours, in spite of the fact the sows were fed nothing but oats for six days following farrowing. Several died when about twenty-four hours old. At eight weeks of age there remained 276 pigs, many of which were runty. They were vaccinated, and some trouble followed, as was expected. At ten months the herd consisted of 167 pigs, an average of a fraction over two pigs per sow. At that time they were sold, and weighed 136 pounds each. During their entire life they had access to blue-grass pasture and a self-feeder containing shelled corn and tankage.

On the same farm, farrowed in the same farrowing house, 500 pigs were raised from 97 aged sows. No trouble was seen in the pigs from the old sows, and when seven months old they were marketed, weighing over 200 pounds.

What remained of the eighty head of gilts were again bred in November, 1922, and the same chronic pneumonia appeared in their 1923 litters. However, not so much trouble was experienced, which goes to show that this disease is often, if not always, inherited and to a certain extent self-eliminated.

Note: The case report refers to gilts bought of Mr. L. J., a prominent farmer and hog-raiser living about six miles southwest of Bloomington. I do not know whether his farm is included in the McLean County system of farm sanitation but believe it is. I think Mr. J. tells the truth when he states that the gilts had not gone through disease while on his farm.

The young boars were from Mr. F. K., who lives just outside the northeast city limits of Bloomington. He has had all kinds of trouble on his farm to my knowledge, for I have been called in consultation to observe his herd at least twice and have found a sort of "Duke's mixture" each time. On one occasion, at least, my findings were verified by laboratory findings by Dr. Shore. This was in late summer of 1920. I have been told that Mr. K. had quit trying to immunize his pigs. Dr. Hastings does not state tha the gilts were bred to these boars, but infers they were exposed by shipment in the same car from Bloomington to Williamsville.

He has stated to me that the best, pure-bred-hog men of his community have practically been forced out of the hog business on account of conditions such as he describes. Several other good practitioners have reported difficulty at breeding or farrowing time similar to that described in this report.

J. S. KOEN.

Massachusetts is credited with having one of the first sanitary acts, a quarantine regulation, passed in 1648.

UNUSUAL CASES IN GENERAL PRACTICE[1]

By R. H. PARKER, *Gastonia, N. C.*

In the practice of any branch of medical science many puzzling problems are met and dealt with in various ways. To a certain extent we find ourselves operating a modern medical detective bureau, and the criminal most often sought is some type of bacterium, fungus, protozoon or parasite, either external or internal; less often the culprit is some poisonous plant, insect or reptile in this particular part of the world.

The search may lead one to all the hidden cavities of the body, to all the delicate organs either in the dead or living animal; it will include consideration of all outside phases of the case such as history, food supply, water supply, and care in general of the animals in question.

Perhaps we must summon aid to obtain a proper solution of the matter at hand and this aid will be the microscopist, the chemist, the botanist or some one of the many specialists, and even then we may find that, like other detective agencies, we sometimes fail, our search having been in vain, and we lay another medical mystery on the shelf to be mused over during our idle moments in days to come.

Looking back over my past experiences in practice I can well remember a few of those medical mysteries that I encountered from time to time, some of which I laid away unsolved with the little consolation of knowing that I am not the first nor last man to hit a stump in the field of veterinary medicine.

Three cases that I am narrating in this paper are cases that were unusually interesting to me because they were so different from the usual run of cases in practice. The first case is one that is paradoxical to the belief of all laymen and as far as I know to all veterinarians.

SNAKE BITE

One morning in August I was called to a small farm adjoining town to see a shoat weighing about ninety pounds. The history of the case was that the owner fed the hogs in this lot early in the morning and at that time all hogs were well and ate heartily. About forty-five minutes later the owner happened to be passing and noticed this shoat in distress.

[1]Read before the ninth annual meeting of the Southeastern States Veterinary Medical Association, Greensboro, N. C., November 12-13, 1923.

At the time of my arrival I found this animal staggering and gasping for breath, and the region of the face and central part of the neck was greatly swollen. In a few minutes the shoat died and did so without any help from myself or owner, for we were discussing the case previous to a more careful and close-up examination.

I was somewhat at a loss to know just what could have caused such a sudden swelling and death in a shoat that was apparently perfectly normal two hours before. I held an autopsy and found the tissues of the face and forehead to be very hemorrhagic, the mucous membranes of the nose, throat and mouth were edematous and ecchymotic, a gelatinous exudate in the anterior mediastinum, petechial hemorrhages also in heart and kidneys. Death was due to suffocation caused by edematous swelling of throat. After the post mortem I could think of nothing that would produce a similar condition in such a short period of time except a snake-bite, or something of a like nature, and told the owner in a joking manner that we would have to diagnose it as a snake-bite.

The following morning I received an early morning call from the same man and found another shoat from the same litter with the same affection, the symptoms being the same except that the case was not progressing so rapidly; the animal dying some six or seven hours later. Another post mortem was held, the lesions found were the same, but this time the owner looked doubtful when my opinion was expressed.

The next morning I received another call from the same man and lost no time going, for by this time I was getting real interested and did not feel so positive about my diagnosis. This time I found another shoat from the same litter with similar symptoms, but less rapid going than shoat no. 2. I looked carefull over the face and nose of this animal for a bite, but because of the roughness of skin and the abundance of bristles I was unable to find any marks

As the hog pasture was small and fairly free from rank vegetation I suggested that we look for a snake. We searched carefully for some time and were about to give it up when we chanced upon a real snake, a husky copper-head, some three feet long. This put an end to our snake and likewise to our hog troubles, for no more hogs were affected in this lot.

My theory is that this snake was in the habit of lying by the pig path that led up to the feeding-trough and at the approach of

the first hog he would strike it in the face and then crawl away. The strike was accurate enough to land in the face where circulation was sufficient to take the venom up rapidly, hence the results. Had the bite been in that part of the body that is covered by a heavy pad of fat the absorption would have been so slow that the poison would have caused no trouble.

Laurel Poisoning

The owner of a flock of sheep came to my office one morning in January and stated that he owned about forty-five head of sheep, and that twenty-four of these sheep had been purchased recently; that three head had died a few days before and these three sheep were a part of the twenty-four purchased and it was his opinion that this new flock was affected with some type of disease. He described symptoms but I could make no diagnosis from his description.

The next day he called me stating that two more sheep were sick. Upon my arrival I found these two sheep suffering with typical symptoms of laurel poisoning. These sheep were in one large lot some two or three acres in size with nothing to eat except that given them. The owner said it was impossible for them to have got any laurel, for the fence was good and they were never allowed out.

I ordered a treatment of flaxseed tea and lard, stating that I expected these animals to die and when dead I wanted to hold a post mortem. The next day I held a post mortem on these two sheep and found the rumen to contain plenty of laurel.

The owner was very much surprised for there was no laurel near. However, we learned a few days later that some girl students in a nearby dormitory had used laurel to decorate their rooms and as the decorations were discarded some would carry them to the sheep. The home-raised sheep most certainly had learned in some way to let laurel alone for none of them was affected.

Yellow Jasmine Poisoning

Early in March I was called to investigate the cause of losses in a herd of cattle. The number of cattle in this herd was about 100, ranging in age from two to six years. Most of them were of the beef type and had been shipped from Tennessee four months previously. They were fed on cotton-seed meal and hulls and some fodder, just enough to carry them through until

grass time. They ranged over a tract of about 100 acres of canebrakes and brush land.

At the time of my visit they had lost eleven head in two weeks and some seven or eight were affected, being in the various stages of the disease. One carcass was available for post mortem, but when we finished it we knew just as much as before, for we found practically no lesions.

The symptoms observed in the seven or eight affected animals were as follows: First a general sluggish appearance that gradually progressed until a general weakness set in. Slight incoordination of muscles of locomotion, at first, which gradually became worse until the animal had the appearance of being intoxicated on some modern moonshine product from which the quarrelsome qualities had been extracted. Finally the animal would go down to stay. In a short time they would be comatose, death following in a few hours.

Some few were said to have convulsions. In all cases the eyes had a peculiar, drowsy appearance, in some the eyelids were half-closed and in all cases the pupils were more or less dilated. The pulse at first was full and slow, later weak and slightly accelerated. The appetite was only slightly impaired at first but later was absent. Bowels sluggish and costive in later stages.

In some cases the animal would partially recover, then relapse and die. The temperature was about one to one and one-half degrees above normal at first and then dropped to subnormal. Duration of sickness was from three days to a week.

After learning all I could from history and symptoms and taking into consideration that I found no lesions in the one animal posted I decided the trouble must be one of food or plant poisoning. The feed was examined and appeared good. The symptoms were such that I thought of poisonous plants, especially of the nightshade family.

Upon inquiry I found that native cattle had ranged this particular territory for years and the natives told me it could not possibly be due to plant poisoning for they had never had any such trouble. However, I had my doubts and remembering the lesson learned from the flock of sheep, I decided to take a look at the pasture. Not being a botanist and not being familiar with the various poisonous plants in North Carolina, I was somewhat at sea to know just what to look for.

After rambling over the pasture for some time I found a spot of about one-half acre that was irregularly covered with a vine-like shrub that was green and had the appearance of being in the state of just putting out. The cattle had been eating some of these leaves and these particular leaves looked suspicious to me.

I had no idea of the identity of this plant so took a sample to send to our State Department. I instructed the owner to take the cattle off this range until more information could be obtained and to give all affected cattle a large dose of saline purgative and some strychnin every three or four hours

A few days later we received a reply from our State Department stating that the plant in question was yellow jasmine. This is the plant from which the drug gelsemium is made. The symptoms of gelsemium poisoning, as given in our text-books, checked quite closely with those in this trouble. This solved the problem, for after this was grubbed up the trouble ended. All sick animals that were affected at the time of my visit made complete recoveries.

In closing I wish to state that I am inclined to think that native animals often learn to let certain poisonous plants alone, while imported animals often pay a penalty for not knowing. Our domestic friends may not be able to think, but they do show evidence of having good faculties to remember certain lessons taught them by Mother Nature.

DR. BOYNTON TO CALIFORNIA

Regents of the University of California recently confirmed the appointment, effective July 1, 1924, of Dr. W. H. Boynton, head of the Pandacan Research Laboratories in the Philippine Bureau of Agriculture, as Professor of Veterinary Science in the College of Agriculture. It is expected, however, that Dr. Boynton will arrive at a somewhat earlier date and begin at the University certain research operations under the terms of a leave of absence from the Philippine Government.

Widely known in the tropics for epoch-making work on rinderpest, Dr. Boynton has applied his methods to hog cholera and is reported to have succeeded, after years of labor, in producing a new vaccine not only "fool-proof" in its ease of administration but also, it is said, capable of conferring dependable immunity in almost every case. The vaccine is given by mouth, and may even be given with the food. The method will have its first public demonstration upon Dr. Boynton's arrival in California.

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

AN UNCOMMON CASE REPORT IN A COW

By L. A. WILEDEN, *Mason, Mich.*

On December 2, I was called to visit a cow of the Durham breed, middle-aged and in good flesh. The history was that she had been in good health until the day before, when it was noticed that she refused her feed and the bowel movements were scanty. She had received no exposure or irregularity in care or feed.

The patient was lying down when I called, and grunting slightly. The paunch was full and firm, the nose dry but not hot, the contents of the rectum was dry, scant and coated with a slight amount of mucus. While examining the contents of the rectum, I also examined the fetus in the uterus, as the owner stated she was due to freshen on the last of the month. The fetus was alive and in normal position.

I made a diagnosis of impaction and gave a package of Bovine Hydrogogue (LaFayette Pharmacal Co.), dissolved in 32 quarts of water, through the esophagus, with the stomach-pump. I injected 16 quarts of warm, soft water, containing a little soap, into the rectum, as a deep enema. I left six tablets, each containing barium chloride 30 gr., tartar emetic 30 gr., and strychnin sulphate ¼ gr., with directions to give two tablets night and morning. I also left a powder containing nux, gentian, and filled with artificial Carlsbad salts, and directed two tablespoonfuls to be given four times a day, in a drench. I ordered all feed withheld till the physic acted, and then to give only slops or mashes until she improved. I had a pail of fresh water placed in front of her often.

I heard no more of the case until on the 9th, when a neighbor, who had been taking care of her while the owner was called away, called me up, stating that the cow was no better. No apparent change had taken place in the case. No bowel movement, appetite, or thirst. I repeated the treatment described above. The fetus was alive, normal and in position.

Twenty-four hours later the owner returned, and came to the office, stating that there was no change. I prescribed powdered aloes and glauber salts, equal parts, and directed that four tablespoonsful be given in a quart of water every four hours till the bowels moved.

I was called out again the 11th, and found the cow weaker, eyes sunken, no feces in the rectum, calf alive and normal in the uterus. The paunch was softened a little and peristalsis audible on the right side. I gave another package of physic through the esophagus with 32 quarts of water, and injected 16 quarts of warm, normal, salt water through the trocar into the paunch, also a normal-salt-water enema. I told the owner to keep up the tablets and tonic, and to tempt her with anything he thought she would eat.

On the 13th he called me out, and said she had drunk four quarts of water and eaten about a handful of sliced beets and bran. There was no marked change in her condition otherwise. I repeated the package of physic and 32 quarts of water through the esophagus, and gave a salt-water enema, and informed the owner that I was afraid of a mechanical obstruction and had done everything I knew how to do. The calf was still alive.

The owner came to the office on the 17th, and, reading a smile on his face, I asked the news. He said that on the night of the 15th he gave her a dose of medicine, and, as she was about to collapse, he turned her out into a covered, straw barn, so that if she died he could haul her more easily, and gave up all hopes. The next morning, instead of finding a dead cow, he found she had given birth to a normal, heifer calf, and it was nursing, and she was running off at the bowels in great style. This continued twenty-four hours, and she returned to food and water and made an uneventful recovery.

I am still puzzled to know what was the matter.

PASSING THE SOUND ON THE BULL

By E. E. Wegner, *Pullman, Wash.*

Dean, College of Veterinary Science, State College of Washington,

We have labored under the impression, for many generations, that it was impossible to pass a sound or a catheter on the bull, because of the double curve that takes place when the organ of the bull is in the resting stage. It is sometimes convenient to

locate obstructions, particularly calculi, that float out from the bladder and become caught somewhere in this duct. We have assumed that they are most likely stopped at the first curve of the S, but previously have had no means of knowing their exact location. The writer has been of the opinion for some time that it would be possible to pass a catheter on this animal and has applied to various instrument houses urging them to make a waxed linen catheter of about the size used for the dog, but four and a half or five feet long. The reply has inevitably been that such catheters were made in Europe only and that such could not be procured in the United States.

That being the case investigation was made to determine if there was not some kind of a sound that could be used to demonstrate whether or not the passage of this instrument was practical. The best results are obtained by using a number 20, lead, fuse wire that may be obtained from any electrical shop. Heat the end until it is somewhat expanded, making a proper ball- or knob-shaped point. This lead sound is very easily bent and will follow any tube that is reasonably straight.

To pass the sound cast the animal and confine it by tieing front and hind feet of the same side together. This exposes the abdomen and shortens the antero-posterior dimensions of the belly. Protrude the organ from the sheath in the usual manner and as soon as the end appears grasp it with a moist towel and draw it out from the sheath a distance just far enough so that it can be firmly grasped with the entire hand. This is as far as is necessary to obliterate the S-shaped curve that occurs in the resting condition. The sound then properly lubricated may be passed into the urethra and easily passed the full length of the organ in the bull. At the ischial arch it may be necessary to manipulate the sound a little bit to make it pass this rather sharp curve, but with a small amount of manipulation it will pass around it and will enter the bladder directly.

I feel perfectly safe in saying that while we have not used this method a great deal and it is still somewhat new, that we have experimented with it enough to demonstrate that it is altogether practical and that it could be used to good advantage in cases where there is obstruction of the urethra, and the obstructing object could be located accurately so that the operator would know exactly where to make his incision to relieve the condition. I am equally sure that as soon as we can have proper

catheters made for this animal, that it is entirely practical to draw the urine from the entire male of the bovine species.

This demonstration was one of a number of demonstrations that were made at the Post-Graduate School for Veterinarians at the College of Veterinary Science of the State College of Washington on January 16, 1924. It is really quite astonishing that we have so long held the opinion that this was impossible, because the very simplicity of it will make you wonder that this has not been done these many generations.

DRASTIC ACTION

One of our members who has experienced great difficult in collecting his accounts the past year recently adopted dernier measures to get his clients to pay up. To each client, with an unpaid account, he sent the following notice:

> BECAUSE we are paying interest on $12,000 in order to carry the accounts of our clients who do not pay their bills;
>
> AND BECAUSE the payment of our own bills, when due, and our living depends upon the collection of money due us;
>
> AFTER January 1, 1924, WE ABSOLUTELY WILL NOT make a call on a place where they have an account with us over thirty days old, UNLESS SATISFACTORY ARRANGEMENTS HAVE PREVIOUSLY BEEN MADE.
>
> Your account on our books shows $.....

At about the same time an ad. was placed in the local paper, stating that accounts, past due on February 1, would be offered for sale.

We are advised that the plan worked.

FROZEN REINDEER MEAT

The carcasses of 33 reindeer, slaughtered on St. Lawrence Island, Alaska, by Government officials, were recently received at Spokane, Wash., and placed on sale in public markets. The carcasses were shipped whole, frozen solid, with hides on. To preserve the flavor and juice of the meat the carcasses were cut up and sold without thawing. This is a recent experiment of the Government in an effort to utilize reindeer meat for domestic consumption.

REVIEWS

THE AGE OF THE HORSE. J. L. Frateur, Professor at the University and Director of the Institute of Zootechny, Louvain. Authorized translation by G. Mayall, M. R. C. V. S. 65 pages, with 27 colored plates by E. Tschaggeny. Bailliere, Tindall and Cox, London, and Alexander Eger, Chicago, 1923. Price $1.00.

It has been the aim of the author of this little manual to make available a practical guide for the determination of the age of the horse by the teeth. The book is divided into three parts, the first dealing with the anatomy of the teeth, the second, the major portion, being devoted to the subject in hand, and the third containing a brief review of dental irregularities.

The colored plates illustrating the different ages of the horse are by the celebrated animal painter, Edmond Tschaggeny. For those veterinarians who now only occasionally see a horse, this little book will serve as a handy memory-jogger between times.

DISEASES IN CAPTIVE WILD MAMMALS AND BIRDS. By Herbert Fox, Pathologist to the Zoological Society of Philadelphia, Director of the William Pepper Clinical Laboratory, University of Pennsylvania. 665 pages, with 28 tables and 31 graphic charts in the text, and 87 figures. J. B. Lippincott Company, Philadelphia, 1923.

Here is a book that is unique. It will fill a space that has been empty in our veterinary libraries. It is equally of interest and importance to the biologist and the pathologist, veterinary, human, or comparative.

The material in the book represents twenty-two years of work, observation, study and record-keeping in connection with the wild animals in captivity at the Philadelphia Zoological Garden. As pointed out in the foreword, by Dr. Charles B. Penrose, president of the Zoological Society of Philadelphia, the animals studied "have not been subjected to experimental procedures and conditions, and though their mode of life has not been that strictly natural to them, yet they have not been influenced by any of the artificial procedures of the laboratory which are usually followed in investigations on animals."

The book is divided into eighteen sections, dealing with diseases and conditions of the various systems of the body. One section deals with the relation of diet to disease. Another covers the incidence and significance of animal parasites. Under the infectious diseases, tuberculosis takes up 75 pages.

In the section dealing with the female reproductive organs, the statement is made that examples of abnormality and disease are not very numerous. Further, it is stated that abortion and miscarriage are occasionally seen in the monkeys, rodents and ungulates, with the cause seldom determined. It would appear that no mention is made of breeding problems, sterility, and the possibility of infections of the genital tract, such as we have in domesticated mammals. Maintaining these wild species, through proper reproduction, under artificial conditions, would appear to be a real problem, although this is not indicated by the text.

To attempt even to mention the interesting conditions encountered by Dr. Fox and described in his book would be absolutely impossible in the space available. We commend the book to veterinarians. It is a distinct contribution to our literature.

ABSTRACTS

SPECIATION AND HOST RELATIONSHIPS OF PARASITES. Chandler, Asa C. (1923). Parasitology (London), 15 (3), pp. 326-339.

According to Chandler, two diverse tendencies are displayed amongst parasitologists at the present time with regard to the questions of speciation and host relationships of parasites. One tendency is to look upon parasites living in two different hosts, or in two different habitats in or on a single host, and more or less constantly showing slight morphological differences, as distinct species until there is some positive evidence for considering them identical; the other tendency is to consider such parasites as identical until definitely shown to be distinct.

Until recently the former tendency has been more pronounced. However, with the growing evidence showing that when a parasite is transferred to a different host it may undergo certain morphological changes which are more or less constant so long as it remains in or on the new host, together with increasing evidence that parasites in the course of a few generations increase their adaptability to a given host, a tendency in the opposite direction is becoming evident.

Some of the parasites affected by the above consideration are species of the genera Sarcoptes, Chorioptes, Psoroptes, Demodex, Pediculus, Hymenolepis (as regards *H. nana* and *H. nana fraterna*), the Leishmania-Herpetomonas-Trypanosoma group of flagellates, Trichomonas, Giardia, Endamoeba and the Rickettsia-like organisms. The known facts favor an extensive recognition of the impurity of species in nature, of the instability of the physiological and morphological characters of parasites as well as of other animals, and of the consequent inconstancy of infectivity and pathogenicity.

For this reason it would be wiser to await some positive evidence of the multiplicity of species of closely related species of parasites living under different environmental conditions before elevating those parasites to the rank of species and giving them specific names. At the same time, parasites from different hosts and habitats should not be lumped together, as inaccurate determinations impair the value of many scientific observations. The use of a trinomial system of nomenclature, using varietal names for closely related forms from different hosts and habitats, is a course especially adapted to the needs of such cases existing in the field of parasitology.

M. C. H.

FURTHER INQUIRIES INTO THE ZOOLOGICAL STATUS OF THE POLYMORPHIC MAMMALIAN TRYPANOSOMES OF AFRICA, AND THE MEANS BY WHICH THEY ARE SPREAD IN NATURE. Duke, H. L. (1923). Parasitology (London), 15 (3), pp. 258-295.

Duke concludes that the present system of classifying the mammalian trypanosomes is unsound and needlessly complicated. Many species, so-called, are really strains, races or varieties of a single wide-spread species, the differences found being determined by environmental differences. (In this connection, see the review of Chandler). The sound characters are the morphology and the developmental behavior of the parasite in the intermediate insect host. On this basis, the trypanosomes in question fall into three main groups as regards their development in species of Glossina. These groups are the "proboscis-only," "proboscis-and-gut," and the "gut-and-gland" groups, with the corresponding and characteristic morphology of the *vivax-uniforme* type, the *nanum-congolense* type and the polymorphic type. *Trypanosoma vivax* and *T. uniforme* are morpho-

logically distinct and seem to be good species. *T. nanum* and *T. congolense* (—*T. pecorum*) appear to be physiologically different strains of a single species. *T. brucei, T. gambiense* and *T. rhodesiense* appear to be physiologically different strains of a single species. *T. evansi, T. equinum* and *T. equiperdum* appear to be difficult to classify.

The relations of wild game to trypanosomes are very complicated and many factors must be taken into consideration in determining whether the advantages of the presence of game in Africa outweigh the disadvantages or not. Duke believes the best line of attack on trypanosomes at present is through an attack on the fly rather than on the game.

The subject of the possible importance of direct transmission in determining the virulence and spread of trypanosomes in nature is emphasized.

M. C. H.

A Reference List of the Trematode Parasites of British Birds. Nicoll, William (1923). Parasitology (London), 15 (2), pp. 151-203.

A Reference List of the Trematode Parasites of British Mammals. Ibidem (3), pp. 236-252.

These are comprehensive lists of parasites and hosts, and are of great value, especially to parasitologists in Great Britain. They would have even greater value to parasitologists if they contained notations showing which of the parasites listed had actually been found in Great Britain in the hosts listed. (In the list of bird trematodes, *Metorchis crassiusculus* is listed from the domesticated duck. The only record of the sort known to the reviewer is in a paper by Kholodkowski (1902), and in a reprint of that paper in Dr. Hassall's library there is a correction, in ink, apparently by Kholodkowski, changing the record to *Metorchis xanthosomus*. On the evidence available to the reviewer it does not appear that *M. crassiusculus* has yet been found in the domestic duck.)

M. C. H.

A New Genus of Nematodes from the Domestic Rabbit. Graybill, H. W. (1923). Parasitology (London), 15 (3), pp.340-342, pl. xi.

This paper describes *Obeliscus cuniculi* n. g., n. sp., from the stomach of the rabbit at Princeton, New Jersey. The genus is

said to be close to *Graphidium*, but the spicules are not so distinctly filiform, there is a definite dorsal lobe in the bursa, the bursal rays are not uniformly and symmetrically spaced (the latero-ventral curves away from the ventro-ventral and then recurves so that the tips are close together; the medio-lateral and postero-lateral rays are close together and somewhat remote from the externo-lateral), and the externo-dorsal ray is short instead of long and prominent as in Graphidium. The worms are white, except for a dark streak due to the intestinal coloring; the male 1 to 1.4 cm. long and the female 1.5 to 1.85 cm. long.

M. C. H.

TIME REQUIRED FOR FOOD TO PASS THROUGH THE INTESTINAL TRACT OF FOWLS. B. F. Kaupp and J. E. Ivey. Jour. Agricultural Research, xxiii (1923), pp. 721-725.

A study was made of the time required for the passage of food through the digestive tract of poultry. In this experiment different substances were used to stain the food materials. It would seem that lamp black gave about the best results. The gentian violet and the methylene blue seem to exercise some influence upon the normal function of the intestinal tract. Hens were started on this experiment after allowing one day's confinement without food.

It is interesting to note that the time of passage of food varied in laying hens, hens which were not laying, and in broody hens. The average time required for the food to pass through the intestinal tract of growing fowls was 3 hours and 52 minutes; laying hens, 3 hours and 46 minutes; the adult hen, not in laying condition, 8 hours; and the broody hen, an average of 11 hours and 44 minutes. The broody hen showed the same results whether confined to coops or on nest.

L. W. G.

STUDIER ÖVER FRAMSTÄLLNING AV ANTITOXISKA SERA. (Studies on the Production of Antitoxic Sera). Edwin Lehnert. Skandinavisk Veterinär-Tidskrift, Uppsala and Stockholm, 1922, *12*, 190-198. (Reprinted from Abst. of Bakt.)

This is a discussion of the methods employed in the State Serum Institute, Copenhagen, Denmark. The effect of the hydrogen ion concentration on toxin production, and thus indirectly on antitoxin production, is also dealt with.

H. J. S.

ASSOCIATION MEETINGS

CALIFORNIA VETERINARY PRACTITIONERS' WEEK

The annual Veterinary Practitioners' Week in California was held at the University Farm at Davis, January 7-10, 1924. One hundred six veterinarians were registered during the period. Colorado, Oregon, Nevada, Iowa, and even Hawaii were represented. The four days were filled from 8:30 a. m. until after 10 p. m. with lectures and demonstrations on many phases of veterinary medicine. It was truly a practitioners' program and the interest and enthusiasm equalled if not exceeded that of previous courses.

The special lecturers included Dr. T. H. Ferguson, Lake Geneva, Wisconsin, Dr. Maurice C. Hall, Senior Zoologist, U. S. Bureau of Animal Industry, Dr. K. F. Meyer, Professor of Research Medicine, University of California and Acting Director of the Hooper Foundation for Medical Research in San Francisco, and Dr. W. Pffenninger of the Veterinary Medical Faculty of the University of Zurich. In addition to these men Federal and State officers, members of the faculty of the University of California, and private practitioners contributed to the program.

Special attention was given to diseases of cattle, hogs, poultry, and small animals. Sheep and horses received honorable mention however on a number of occasions, particularly in the lectures on parasites by Dr. Hall, and in the address by Colonel W. G. Turner, V. C., U. S. A. on "Methods of Inspection for the Purchase of Horses for the U. S. Army."

The operations performed and the practical lectures given by Dr. Ferguson on diseases of cattle were especially interesting to the practitioner. Various diseases and abnormalities of the udder of the cow, including mammitis, teat tumors, fistulae, strictures, etc., were discussed and curative surgical procedures demonstrated. Complete extirpation of the udder marked the climax to discussions and operations on this important organ of the cow.

The diseases and accidents that occur to the head of cattle were also covered in a most satisfactory way. By way of demonstration of some of those disturbances, Dr. Ferguson showed and operated upon a case of actinomycosis of the inferior maxilla. The case was so advanced that the prognosis was unfavorable.

However the operation was performed by chiseling away a large part of the honey-combed mandible and by removing all the visible diseased foci. At this writing (28 days after) the case is well on the way to recovery.

Although not on the program an advanced case of traumatic pericarditis was fortunately (for the veterinarians) available. Dr. Ferguson, by the use of chloral hydrate, given by the stomach-tube, and local anesthesia, performed rumenotomy and extracted a handful of varied kinds of hardware, including hairpins and small staples, from the reticulum. In addition to this he passed a trocar into the pericardial sac and drew off about 2 liters of purulent serum. Prognosis was decidedly unfavorable before operation, and upon autopsy forty-eight hours later the reticulum was found clear of foreign bodies, but the well-known lesions common to this disorder that were found left no doubt but that death could not have been prevented.

Dr. Ferguson finished his four days of strenuous work by a cesarian operation on a cow. This was also performed under chloral hydrate and local anesthesia. Had time been available, and had the cases at Davis lasted, the veterinarians of California would have enjoyed hearing him speak and watching him operate for a much longer time. Opportunities for demonstration at other places in the state would have been available but Dr. Ferguson had appointments to lecture at Pullman, Washington, the following week.

Dr. Hall brought to the veterinarians of California a subject always of importance, but one which has seldom appeared on their programs. The parasitic diseases of animals, which was the general topic of his lectures, are always of special interest, but more than that the veterinarians in California were gratified to hear and see the man whose investigations in the field of parasitology were so well known by the printed word and by their practical application.

To review the information which Dr. Hall left with the practitioners here would far exceed the space available for this report. But every veterinarian has a broader and more accurate conception of the advances that have been made in this field and of the relations of parasites to disease in general than they ever had before. The importance of the prevention of parasitic infestation, especially to the young, was stressed by Dr. Hall and the great mortality in infant live stock due to parasites was pointed out to

be in considerable extent preventable by the application of newer knowledge of the life histories of many parasites.

One period of the course was given over to laboratory practice in the examination of feces for parasite eggs. Coincident with Dr. Hall's lectures in Davis, a young woman died from trichinosis in the Woodland Sanitorium, ten miles distant. The mother also was not expected to live. Infestation occurred through the tasting of raw sausage being prepared on the ranch. A piece of the diaphragm of the young woman was brought to Davis and many parasites were demonstrated. By way of further emphasis to the importance of Dr. Hall's subject the interesting B. A. I. films, "The Ox Warble" and "Stable Flies and Their Control," were shown during one of the evening sessions.

One of the outstanding features of the "Practitioners' Week" this year was the address of Dr. W. Pfenninger, of the Veterinary Medical Faculty of the University of Zurich, on the subject "Our Present Knowledge Regarding White Scours and Similar Diseases of Calves." The veterinarians of California are to be congratulated upon the privilege of having heard this original paper. The opportunity was offered because Dr. Pfenninger is visiting the United States and was in California. No more complete review of the scientific knowledge upon these important diseases of calves has ever been given in this country. It is hoped that the paper will be printed in the not distant future.

Dr. K. F. Meyer, whom the veterinarians are always glad to hear speak, gave a most interesting talk on "Medical and Non-medical Experiences in Europe." Dr. Meyer has recently returned from a year of traveling in Europe, where he visited most of the countries in which important research upon disease is being conducted. In England he observed an outbreak of botulism in human beings and advised with the authorities in methods of preventing future occurrences. The grass disease of animals in Scotland was also observed. In many respects this disease resembles botulisn. He stated that there is no money for research in most of the countries of Europe. The research workers are unable to purchase experiment animals and many of the men are spending their time in writing only.

The poultry industry of California is a highly specialized one. Many districts are particularly adaptable to poultry raising and in certain of these areas this industry is highly developed. Because of this fact and also because the veterinarian can be of service to the poultry raiser and to himself as well, the subjects

of poultry raising and the diseases of fowls occupied an unusually prominent place on the program. The topics of "Poultry Breeding," "Poultry Housing" and "Poultry Feeding" were discussed by Professor A. W. Lippencott, of the University of California. Some of the diseases of poultry were handled by Dr. J. R. Beach, of the Division of Veterinary Science, under the title of "Nutritional Diseases of Poultry."

On the last day of the course Dr. Elmer Drew Merrill, recently appointed Dean of the College of Agriculture of the University of California, made his first appearance before a California audience. Dr. Merrill comes from the Directorship of the Philippine Bureau of Science at Manila. During his address public announcement of the appointment of Dr. W. H. Boynton, head of the Pandacan Research Laboratories, in the Philippine Bureau of Agriculture, to a professorship in Veterinary Science in the University of California was made.

Dr. Merrill stated that Dr. Boynton had perfected a vaccine for the prevention of rinderpest that was practically 100 per cent efficient and that the same principles when applied to the preparation of a vaccine for hog cholera produced equally good results. The vaccine for hog cholera is inexpensive of preparation and produces immunity to the disease through oral administration. It is expected that Dr. Boynton will begin the preparation of the hog cholera vaccine at the University of California and his researches in the prevention of other animal diseases along similar principles about July 1.

F. M. Hayes.

UNIVERSITY OF PENNSYLVANIA VETERINARY CONFERENCE

The annual conference of veterinarians at the University of Pennsylvania was held, January 8-9, 1924, with an attendance of two hundred.

The first session was devoted to poultry diseases and management. Dr. F. R. Beaudette, of the New Jersey Experiment Station, gave a very interesting talk on "Differential Diagnosis and Control of Poultry Diseases," accompanying his remarks with several cleverly executed autopsies. This was followed by a talk on "Poultry Management Principles of Importance to Veterinarians," by Mr. Paul M. Guldin, of Yellow House, Pa. This session was one of the outstanding features of the conference.

In the afternoon, the program provided much interesting material along the line of milk and meat hygiene. The first speaker, Dr. Vincent C. Moyer, of the Supplee-Wills-Jones Company, discussed "Dairy Inspection for a Large Milk Distributor." Next Dr. George W. Grim, Ardmore, Pa., gave a lantern-slide talk on "Supervision of the Commercial Pasteurization and Distribution of Milk." The slides illustrated the machinery and equipment used in a modern milk plant and proved very instructive.

"The City End of Milk Hygiene Work," by Dr. H. B. Roshon, Reading, Pa., and "The Milk and Meat Inspection System of Reading, Pa.," by Dr. E. E. Romberger, proved conclusively that Reading must be a pretty healthy residential section. It also proved a splendid tribute to the efficiency of veterinary service along public health lines.

The concluding paper in this session was entitled "Meat Inspection in a Large City." It was presented by Dr. E. E. Behrens, Supervising Meat and Cattle Inspector of Philadelphia. To prove that Philadelphia was not to be outdone by Reading in protecting its inhabitants from improper meat, we learned from Dr. Behrens that his force of inspectors condemned as unfit for human consumption, thirty-two (32) tons of turkeys just before Thanksgiving of last year, because of improper packing and shipping and consequent spoiling.

The evening session was opened by a talk on "Veterinary Service from the Stockman's Viewpoint," by Mr. E. S. Bayard, Editor, National Stockman and Farmer. Mr. Bayard in his usual, inimitable style won our hearts. He gave us a lot of good advice and friendly criticism, in a witty manner. "Don't call our sick pets 'cases,' because to us they are very dear, both from an economical and a sentimental standpoint," said Mr. Bayard. Following this address, a smoker-luncheon was given in Leonard Pearson Hall.

At the opening session of the second day, Dr. Edward Lodholz, of the Graduate School of Medicine, gave a scholarly address on "Internal Secretions: their Meaning, their Action, their Value." The subject of Endocrinology is growing by leaps and bounds, leaving most of us in a bewildered state of mind concerning it. Dr. Lodholz did much to clarify the situation by summarizing the subject in a clear, scientific manner.

We were next entertained by a talk on "Sheep Industry and Flock Management in Pennsylvania," by Mr. W. B. Connell, of

Pennsylvania State College, who impressed us with the magnitude of the sheep-raising industry. The United States produces less than half of the wool it uses, a lamentable fact. Though there has been a falling off in sheep-raising in Pennsylvania, its one-half million sheep produced $5,000,000 income in 1923.

Dr. John W. Adams spoke on "The Actual Cautery in the Treatment of Inflammation of Tendon, Ligament, and Periosteum." It was a very interesting, practical talk, the kind with which Dr. Adams always holds his audience.

The final session was given to small animal practice. The first paper, entitled "The Non-Descendent Testicle in Small Animals," by Dr. Frank H. Miller, New York, emphasized the importance of an early operation to remove the organ because of the tendency to malignancy. Six months of age is the limit of time to wait for the organ to descend naturally.

Dr. Bruce Blair, New York, followed with "Some Observations in Small Animal Practice, in Clinic and Hospital, During a Period of Ten Years." Dr. Blair discussed many of the ordinary ailments which he has encountered. This and the preceding paper provoked considerable discussion and many interesting points were brought out to our mutual enlightenment.

The last number on the program was a lantern-slide talk by Dr. H. W. Barnard, Lancaster, Pa., on "The Dog Hospital as a Hobby." The slides showed various plans and specifications as well as the finished product of ideal small animal hospitals.

V. G. KIMBALL, *Recorder.*

MAINE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maine Veterinary Medical Association was held at the Congress Square Hotel, Portland, Maine, Jan. 9, 1924.

Those present were: Drs. C. F. Davis, E. V. Estes, M. E. Maddocks, M. H. Potter, W. H. Robinson, F. L. Russell, E. E. Russell, H. L. Stevens, C. W. Watson, H. B. Wescott, N. W. McCaughey, J. B. Reidy, R. E. Libby, Dr. J. M. Buck, B. A. I., Washington, D. C. and Mr. H. M. Tucker, Chief, B. A. I., of Maine.

It was moved and voted that the Secretary send bills for Association dues to members in arrears, and that some action be taken at the July meeting on any members who then owe for dues more than two years.

Dr. J. M. Buck presented a paper on "Bovine Infectious Abortion and Its Control." This paper was a masterpiece of arrangement of the known facts regarding the disease and showed a thorough personal knowledge of the malady. Dr. M. E. Maddocks read a paper entitled "Fright Disease of Dogs." Dr. P. R. Baird presented a paper, "The Horse *vs* the Tractor." Following the papers, a general discussion of the subjects took place, especially of the paper on abortion disease.

Officers elected for the year 1924 were: President, E. E. Russell; Vice-President, C. L. Ryan; Secretary-Treasurer, P. R. Baird.

The next meeting of the association will be held in Waterville, April 7, 1924.

P. R. BAIRD, *Sec'y-Treas.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY

The fortieth annual meeting of the Veterinary Medical Association of New Jersey was held at the Columbian Club, Jersey City, N. J., January 10, 1924. The meeting was called to order by President Haffer. He gave a short address, extending to all wishes for a prosperous year. One charter member was present, Dr. A. W. Axford, of Chester. The regular order of business was suspended and the literary program was enjoyed for the first part of the day.

Dr. Edward A. Cahill, Vice-President of the Pitman Moore Co., gave an interesting talk on "The Use of Biological Products."

Some of his remarks were: Biologics have been used too generally. They came into use very rapidly and the practitioner had not taken too great pains to diagnose his real condition. Together with the producers' illuminative advertising things were overdone. Now we are undergoing a reaction and the practitioner is inclined to say that biologics are no good.

Bacterins and vaccines are valuable in some conditions, viz: the old-tried tetanus antitoxin, hog cholera serum and virus, rabies vaccine, etc. Canine distemper bacterin is good, in the right place and at the right time. Mixed infection bacterins are good if diagnosis is correct and they are used right. To illustrate: Anti-blackleg serum gives immunity for ten days only. It should not be expected to do better than that. Baby pigs

should not be immunized. Two things cause most of the so-called "breaks"—lack of virus and too young a pig.

The profession has been criticized because of the fact that one dose is expected to do the work of a real immunizing process. The first dose gives 30% immunity, the second dose gives 75% immunity and the third dose gives 85%. The tendency to give one large dose is wrong. The "drop," or negative phase, is too great after a large dose of most bacterins; not only too low but also 50% longer than it should be. Geographic conditions may be a factor in the control of disease but the user may be and probably is a greater factor.

Dr. John von der Leith, Chief Bacteriologist to the Hudson County Board of Health, spoke on "The Rabies Situation." Rabies is more widespread in Hudson County than ever this year. Probably all of the municipalities in New Jersey are infected. In 1923 there was over one dog's head a week, that had rabies, examined by the Hudson County Board of Health. There were over 900 police-reported cases of people bitten by rabid dogs and treated at the Hudson County Hospital, almost three every day. Essex County probably has more infection than Hudson. Dr. von der Leith advocated a state-wide ordinance, a better home control of dogs and a more rigid regime of picking up stray dogs by the police. He urged this Association to take an active part in stamping out rabies and in bringing the situation before the public.

Dr. George W. Little, formerly Chief Surgeon of the A. S. P. C. A., New York, read a paper entitled "Relation of Diet to Diseases in the Dog." He said that milk is the perfect food, and that most all dogs will take it. Meat and milk should be the main foods. Hunting dogs should have an abundance of meat. House dogs should have some at all times but not so much as hunters. The prohibited foods are: Liver, pork, ham, bacon, fried eggs, raw fish, cake, sweets, candy. The undesirable foods are: Potato, chicken, dog biscuits, veal, rice.

Wheat starch does not supply the necessary vitamins. Most dog crackers or biscuits are of wheat flour and dehydrated meat, which is of no value as a food. Excellent foods are beef, cooked or raw, lamb or mutton, spinach, cauliflower, steamed cooked onions, cabbage, hominy or corn cakes, oatmeal, raw eggs, milk.

A diet for a three-months-old puppy: One raw egg, one cup of milk, one zwieback, one teacup of broth, one teacup of oatmeal or wheatena, slice of bread, onion, spinach, or cauliflower.

Morning: Egg, milk and oatmeal.

11 a. m.: A bone.

Noon: Beef broth, bread, teaspoonful of chopped meat, onion, spinach or similar vegetable.

5:00 p. m.: Another bone.
6:00 p. m.: Duplicate the noon meal.
10:00 p. m.: Cup of broth.

An average-size dog, at six months, should have ¼ lb. of meat; at nine months, ½ lb. of meat, besides the other foods. Use lime water instead of sulphur water. Malted milk tablets make excellent food for tiny dogs.

Dr. O. E. McKim, from the Research Laboratories of Dr. Fenton B. Turck, New York City, spoke on "Prenatal Poisoning caused by Tissue Extracts; 'Cytost' and Its Effects." All prenatal poisoning is the same. Disease, starvation, etc., result in the same condition of the cell. The etiological factor of disease is biological in form due to "cytost" or tissue extract. All disease has the same effect by liberating "cytost." Only extracts of the same species affect the animal. "Anti-cytost" produces immunity. The amount of immunity the parent has certainly affects the offspring, a marked degree of immunity being apparently transmitted. Immunity lasts to certain definite ages in the lives of families according to present experiments. Injections of "anti-cytost" carry them on beyond this stage.

Dr. Charles H. Higgins, Lederle Laboratories, New York City, addressed the Association on "Poultry Problems and the Veterinarian." Fifty per cent of the chickens hatched die shortly after hatching. Parasites are a larger factor in the death of chickens than realized by many. Urates cause white diarrhea. Fast all chicks for 24 hours, then start on whole grain; stay away from soft grain in small chicks. Take the load off of the digestive tract and the chick will live. Our modern incubator is not a really efficient machine. The Chinese, with their sandboxes, beat us out. Turkeys that once have "blackhead" are always carriers.

Dr. James M. Herron, Bordentown, gave "A Synopsis of Bovine Practice." This was a good practical talk for practitioners. He advocated making a 4-inch incision in the skin in cases of tympanites of the rumen. A portion of the uterus is most always on the left. Put cow on right and insert hand; then have assistants turn her over. In bad cases of prolapse of uterus he advocated inserting a tracheal tube to prevent straining. The condition of "swelled head," rather frequently seen, of which we are all at a loss to know just what is the cause, and just what makes it disappear as quickly as it appears, he believes comes from silage feeding.

Dr. W. Reid Blair, of New York City, gave an interesting illustrated talk on "Wild Equines of the New York Zoological Park."

The annual dinner was enjoyed, there being about sixty-five that sat at one large table. There was to be a joint meeting of the Legislative Committee, and a special Rabies Committee was to meet within the next two weeks and endeavor to frame proper legislation to control rabies and have it acted upon.

In the absence of Dr. E. W. Smillie, who is resident secretary of the A. V. M. A., Dr. Silvester urged those present to become members and to take an active part in that association.

The officers elected for the following year were: President, J. W. Haffer, of Paterson; First Vice-President, A. W. Smith, of Orange; Second Vice-President, J. M. Herron, of Bordentown; Treasurer, H. Ticehurst, of Tenafly; Secretary, P. B. Silvester, of Princeton.

The semi-annual meeting will be held in Asbury Park, N. J., on July 10-11, 1924.

P. B. SILVESTER, *Secretary.*

SIXTEENTH ANNUAL CONFERENCE FOR VETERINARIANS AT CORNELL UNIVERSITY

The sixteenth annual Conference for Veterinarians at Cornell University was attended by more than the usual number and close interest was manifested in the program from start to finish. The topics of the papers show the range and variety of subjects covered.

The program opened Thursday morning, January 10, 1924. Dr. G. S. Hopkins presided and the opening address was made by Dean V. A. Moore.

PAPERS

"Posterior Paralysis in Swine" (Illustrated), by Dr. S. A. Goldberg. Discussion opened by Prof. L. A. Maynard, College of Agriculture.

"The Colon Bacilli of the Alimentary Tract of Normal and Diseased Calves," by Dr. C. M. Carpenter.

"Castration and Growth," by Dr. P. A. Fish.

"Functional Disorders and Their Possible Relation to Breeding Efficiency," by Dr. Cassius Way, of New York City.

Dr. Sutherland Simpson, of the Medical College, who has been working for a number of years upon the endocrine system, offered some remarks and exhibited specimens supplementing Dr. Fish's paper.

Luncheon was served at 1:00 p. m.

At the afternoon session Dr. D. H. Udall presided.

PAPERS

"The Blood, Urine and Tissue Juices of the Horse in Azoturia" (second report), by Dr. C. E. Hayden.

"The Physical Examination of Cattle in Dairy Inspection," by Dr. John McCartney, of Middletown, N. Y. Discussion opened by A. K. Zellner, C. I. Corbin and Dr. Ross.
"The Veterinarian in the Production of Clean Milk," by Dr. A. G. Hall, of Earlville, N. Y.
"Tuberculin Testing by Accredited Veterinarians," by Dr. Charles Linch, of the Department of Farms and Markets, Albany.
"Some studies on Intradermal Tuberculin" (Illustrated), by Drs. W. A. Hagan and J. Traum.
"Exit Ascaris." (Film furnished by the United States Department of Agriculture.)

The Thursday evening program was opened with an address of welcome by President Livingston Farrand, which was followed by a paper entitled "The Value of Roughage in Feeding Animals," by Prof. E. S. Savage, of the Department of Animal Husbandry, College of Agriculture. The usual smoker followed.

Friday Morning, January 11, 1924

Papers

"Poultry Diseases," by Dr. E. L. Brunett.
"Intussusception in Dogs," by Dr. H. J. Milks.
"Dog Practice Hints for the General Practitioner," by Dr Frank H. Miller, of New York City.
"An Experimental Study of the Bang Abortion Disease in Cattle" (Illustrated), by Drs. R. R. Birch and H. L. Gilman. Discussion opened by Dr. W. L. Williams.
"Prevention of Disease of Newborn Calves," by Dr. D. H. Udall. Discussion opened by Dr. J. N. Frost.

The alumni association meetings followed, with luncheon at 1:15. The Friday afternoon session was given over to demonstrations in the different departments. Quite as much interest was shown in the various demonstrations and clinics as in the program.

Department of Physiology

Demonstration of some clinical blood and urine tests.

Veterinary Experiment Station

Demonstration of the technique for the examination of the semen of bulls.

Department of Pathology and Bacteriology

(1) Brain lesions in domestic animal.
(2) Demonstration of specific and non-specific intradermal reactions on guinea pigs.
(3) Pathological specimens of poultry diseases.
(4) Tuberculin reaction in poultry.
(5) Autopsies on poultry.

Surgical Clinic (Operating Room)

Surgical exercises on the cow. Operations given over to visitors.

Department of Medicine (Medical Building)

Physical examination of cattle.

Small Animal Clinic

(1) Dressing of cases.
(2) Demonstration of common parasites in dog and cat.

Farriery

Exhibit of special shoes for founder, navicular disease, side bones, and quarter cracks.

Veterinary Experiment Station

Inspection of new buildings at the Anti-Hog Cholera Serum Plant.

An informal dinner was held at the Ithaca Hotel, on Friday evening, Dr. P. A. Fish acting as toastmaster. The after-dinner speakers and their subjects were: Hon. C. P. Norgord, Assistant Commissioner of Agriculture, "The Plan of the Department of Farms and Markets for Controlling Tuberculosis"; Prof. G. F. Warren, of the Department of Agricultural Economics and Farm Management, College of Agriculture, "The Outlook for Agriculture"; Dr. R. W. Thatcher, Director of Experiment Station, Geneva, N. Y., "Needed Experimental Work"; Mr. C. P. Bigler, President of the N. Y. State Holstein-Friesian Association, Syracuse, N. Y., "The Relation of Veterinarians to the Live Stock Industry."

Commissioner Norgord explained in some detail what had been accomplished in diminishing bovine tuberculosis, and the plan of the Department to utilize the service of the practitioners as fully as possible in the future.

It was the hope of the college faculty that the new wing to the main college building might be used at this session, but unavoidable delay rendered this impossible. It is expected that the increased facilities and added conveniences will assist in making the next Conference even more successful.

P. A. F.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

The thirty-first annual meeting of the Virginia State Veterinary Medical Association convened at Murphy's Hotel, Richmond, Virginia, January 10-11, 1924.

The meeting was called to order by the President, Dr. E. J. Will, of Harrisonburg, who made a most timely address, the keynote of which was the stressing of the importance of loyalty in members of the Association, both to the organization and their fellow practitioners. Dr. Will has been a most loyal member of the Association for more than twenty years.

Next on the program was the report of the Secretary, Dr. Geo. C. Faville, of Hampton. This was followed by reports of the various committees.

Dr. B. H. Ransom, of the United States Bureau of Animal Industry, gave a most interesting and instructive address on "Ascariasis of Swine," illustrated by moving pictures. Dr.

Henry Marshall, of Richmond, rendered an excellent paper on "Post-Mortem Technique, with Special Reference to Tuberculosis," and exhibited fresh pathological specimens from tuberculous animals. This paper was most interesting and helpful, especially to those engaged in tuberculosis eradication or meat inspection.

Prof. F. S. Gammack, poultry specialist, of Hampton, read a paper entitled "The Relation of the Veterinarian to the Poultry Industry," which was most interesting. Mr. Gammack was followed by Dr. O. F. Foley, practitioner, of Bridgewater, who presented in a most practical manner the veterinarian's side of the question. His paper was discussed by a number of veterinarians present, showing that there is interest being shown and study given this phase of veterinary practice.

Dr. Wm. Moore, State Veterinarian of North Carolina, entertained the Association by giving some valuable and practical advice on legal matters which concern all veterinarians.

The Association was then honored by an address by Dr. C. H. Stange, Ames, Iowa, President of the American Veterinary Medical Association, who made a talk that will long be remembered by the Virginia Association, as it was very instructive and most interesting. Dr. Stange especially stressed the fact that we must pay more attention to veterinary education, and pointed out several instances which impressed his hearers with the fact that his suggestions were full of logic.

Dr. J. I. Handley, of Atlanta, Secretary of the Southeastern Veterinary Medical Association, was next introduced. He addressed the Association, outlining the area, aim and purpose of his Association. He further stated that the Southeastern Association would convene in Richmond, Virginia, in November, for a two-day session.

Major H. L. Freeland and Capt. H. M. Shoemaker, U. S. Army, outlined the details relative to veterinarians enlisting in the R. O. T. C. The members listened to these gentlemen with close attention and enthusiasm, and from the interest manifested we feel certain a number of Virginia veterinarians will put in their applications.

Later, reports of cases by different members and a general discussion of same, entered into by the entire Association, completed the business and professional program. Election of officers was next in order, and resulted as follows: Dr. E. A.

Robinson, of Petersburg, President; Dr. P. M. Graves, of Culpepper, 1st Vice-President; Dr. W. H. Ellett, of Richmond, 2nd Vice-President; Dr. H. T. Farmer, of Richmond, Secretary-Treasurer.

Following a motion, duly seconded and unanimously carried, a committee of three was appointed by the President to select ten names, members of the Association, to be sent to the Governor with the request that the first five be appointed members of the Examining Board. The President named on this committee Dr. J. G. Ferneyhough, Richmond, Chairman; Dr. John A. Turlington, Wachapreague; and Dr. Burnley W. White, North Emporia.

Dr. Ferneyhough then took the floor; and stated that, if no member of the Association objected, the Governor would be requested to reappoint the present board, consisting of Dr. S. C. Neff, Staunton, President; Dr. Thos. Fraser, Richmond, Secretary-Treasurer; Dr. H. S. Willis, Gordonsville; Dr. W. T. Gilchrist, Norfolk; and Dr. H. H. Adair, Bristol.

The legislative committee, consisting of Dr. J. G. Ferneyhough, Dr. Thos. Fraser and Dr. S. C. Neff, being reappointed by the President, the latter then announced the Board of Censors as follows: Dr. J. P. McDonough, Richmond; Dr. Henry Marshall, Richmond, Dr. R. E. Brookbank, Richmond; Dr. J. F. Kagey, South Boston; and Dr. S. C. Neff, Staunton.

No further business appearing, the Association adjourned, to meet at Ocean View Hotel, Ocean View, Virginia, July 10-11, 1924.

The members then escorted their guests to the dining-room, where more than a hundred covers were laid. The luncheon was given by the Association to its members and their guests. This custom was established some years ago, and is adhered to, each legislative year, at the mid-winter meeting, which is always held in Richmond. The guests of honor were Governor E. Lee Trinkle, Attorney-General John R. Saunders, Lieutenant-Governor J. E. West and many members of the House and Senate. Dr. Stange, of Iowa, Dr. Moore, of North Carolina and Dr. Handley, of Georgia, were the out-of-state veterinarians present. It is needless to add that after a sumptuous luncheon and numerous after-dinner speakers, presided over by our inimitable toastmaster, Dr. Ferneyhough, a delightful time was enjoyed by all.

H. T. FARMER, *Secretary.*

WASHINGTON STATE COLLEGE POST-GRADUATE SCHOOL FOR VETERINARIANS

The College of Veterinary Science of the State College of Washington, gave a post-graduate course for veterinarians of the Northwest, January 14-17, 1924. The states of Washington, Oregon, Idaho and Montana and the Province of British Columbia were well represented at this meeting, there being a total attendance of fifty-five veterinarians. Graduates from twelve of the veterinary colleges of the United States were among those present.

The program was carried out according to schedule, with Dr. Maurice C. Hall, of Washington, D. C., and Dr. T. H. Ferguson, of Lake Geneva, Wis., carrying the heaviest part of the load. These men were ably assisted by Dr. E. A. Ehmer, of Seattle, Dr. W. C. Johnson, of Puyallup, and Dr. J. G. Jervis, of Milner, B. C.

In addition to the veterinarians from outside of the State College, Dr. J. A. Howarth and Dr. J. E. McCoy, both of the State College, presented the subjects for discussion at this meeting. Professor E. V. Ellington, Professor John S. Carver and Experiment Station Chemist, J. L. St. John, also contributed to the three-day program. The results were very gratifying indeed. The men in attendance voted unanimously their appreciation of the post-graduate school and asked that the plan be continued and that similar programs be given here, if possible.

These short post-graduate courses are doing a great deal to create interest in the Northwest and are certainly appreciated by the practitioners of this region.

E. E. WEGNER, *Dean.*

IOWA VETERINARY ASSOCIATION

The thirty-sixth annual meeting of the Iowa Veterinary Association, which was held at Des Moines, January 15-16, 1924, was perhaps the largest meeting that the Association has ever held. In the course of the program, several matters of considerable interest to practitioners were presented, which probably accounted for the special interest, although the Iowa meetings have been growing in size each year.

In his presidential address, Dr. John Patterson stated that he believed that the veterinary profession was now going through a process of elimination, which would be beneficial. He made a

strong plea for both individual and united effort along every line of veterinary activities. Secretary Steel reported 471 members on the roll, and approximately $500.00 in the treasury.

The following program was presented the first afternoon:

"Studies of Post-Vaccination Trouble Cases"—Dr. E. A. Cahill, Zionsville, Ind.

"Some Hog-Lot Diseases"—Dr. R. G. Moore, Dunlap, Iowa.

"Hog-House Sanitation"—Dr. H. J. Shore, Fort Dodge, Iowa.

"The Actual Cautery in the Treatment of Inflammations of Tendon and Periosteum"—Dr. John W. Adams, Pilhadelphia, Pa.

"Cesarian Section in Sows"—Dr. G. T. Smith, Reinbeck, Iowa.

"Some Observations on Farmer Vaccination of Swine"—Dr. B. H. Brooks, Riverton, Iowa.

"Membership in the American Veterinary Medical Association"—Dr. H. Preston Hoskins, Detroit, Mich.

The evening program consisted of the following:

"The Principles of Immunology"—Dr. Chas. Murray, Ames, Iowa.

"Some Phases of Veterinary Medicine" (Illustrated)—Dr. C. H. Stange, President, A. V. M. A.

Dr. Murray gave the tabulated results of the questionnaires which had been sent to Iowa practitioners, in an effort to get some reliable data on the actual use of biologic products and the results obtained with them. Tetanus antitoxin, rabies vaccine, blackleg aggressin and filtrate and hemorrhagic septicemia bacterin (bovine) appeared to be giving the best satisfaction, as far as the data would indicate.

Dr. Stange rendered a preliminary report for the Committee on Statistics, which is compiling figures on the extent of farmer vaccination, in Iowa, and the results.

The Wednesday morning program consisted of:

"The Handling of the Prolapsed Uterus"—Dr. Irving Moles, Central City, Ia.

"Tuberculosis Eradication"—Dr. J. A. Barger, Des Moines, Ia.

"The Cooperation of Practitioners in Tuberculosis Eradication in Iowa"—Dr. R. A. Moye, Manson, Iowa.

In the afternoon the following papers were presented:

"The Iowa Department of Agriculture"—Hon R. W. Cassidy, Secy. of Agri., Des Moines, Iowa.

"The Recent Outbreak of Anthrax in Iowa"—Dr. P. Malcom, Des Moines, Iowa.

"Sanitation and Its Relation to the Control of Anthrax"—Dr. L. E. Willey, Sioux City, Ia.

"Anthrax"—Dr. A. Eichhorn, Pearl River, N. Y.

"Poultry Practice"—Dr. C. E. Ackerman, St. Joseph, Mo.

"My Method of Developing a Poultry Practice"—Dr. P. L. Stow, Applington, Ia.

"Drug Elimination Through the Udder as Related to the Treatment of Mastitis"—Dr. H. D. Bergman, Ames, Ia.

A spirit of optimism prevailed among the Iowa veterinarians, although conditions due to the depression in agriculture have influenced veterinary practice in the state. Farmer vaccination,

while annoying, is not depriving the practitioners of their vaccination work except to a limited extent. The main complaint along this line at the meeting was that some of the permit-holders are vaccinating their neighbors' hogs. Some danger exists from this source, unless this practice is checked, although the law does not permit farmers to vaccinate any other than their own hogs.

As regards tuberculosis eradication in the state, the situation is very encouraging, for practically one-third of the counties have signed up to adopt the county-area plan, and by the end of the summer probably the majority of the counties will adopt this plan. Practitioners are to be used, along with State and Federal veterinarians, in this work, being employed on a per-diem basis. Just how that will develop is a matter that will take some time to determine.

The following officers were elected for the ensuing year: President, Dr. H. D. Bergman; First Vice-President, Dr. R. D. Wall; Second Vice-President, Dr. W. E. Macklin; Secretary-Treasurer, Dr. E. R. Steel; Member of Executive Committee, Dr. C. J. Scott.

E. R. Steel, *Secretary.*

IOWA STATE COLLEGE CONFERENCE FOR VETERINARIANS

The ninth annual conference for veterinarians, held under the auspices of the Veterinary Division of the Iowa State College, was called to order at 9:30 a. m., January 17, 1924, with 170 veterinarians in attendance. These men were chiefly from Iowa, with a few representatives from surrounding states. The sessions were very well attended from the first to the last, and the interest seemed to be unusually good.

Dr. H. B. Raffensperger, of the Bureau of Animal Industry, Chicago, Ill., presented his work on the life cycle of the round worm in pigs. This was followed by a demonstration given by Dr. E. A. Benbrook, of the Department of Pathology, on the methods of identifying parasites and parasite eggs as they are recovered from the feces. After the demonstration, those in attendance were taken to the laboratories, where they went through the steps of identifying the various parasites.

President Pearson addressed the Conference at the opening of the afternoon session. The reaction to his talk was very good

and there were a great many very complimentary remarks made by the veterinarians present. (President Pearson's address will be published in full in the April JOURNAL.)

Following the address by President Pearson, Dr. John W. Adams, Professor of Veterinary Surgery, of the University of Pennsylvania, gave a very complete discussion on roaring in horses, which was followed by an operation on a large draft stallion. It may be interesting to those in attendance to know that the wound has made a complete healing and the animal was returned home on February 12.

"A Demonstration of the Anatomy of the Region of the Withers and a Discussion of the Problems Involved in Operating Fistula of the Withers" was made by Dr. H. S. Murphey, Professor of Veterinary Anatomy, Iowa State College. Dr. Murphey used a recently dissected specimen and this was followed by a similar demonstration by Dr. H. E. Bemis, Professor of Veterinary Surgery, Iowa State College, on animals which had been actual cases, but which had been embalmed, frozen and sectioned in such a way as to show the extent of the diseased process.

In the evening an explanation of the dynamometer car, an invention of Professor E. V. Collins, was given by Professor H. B. Davidson, Head of the Department of Agricultural Engineering. A discussion of the use of the car was given by Professor A. B. Caine, of the Department of Animal Husbandry. Following this, two teams were used in competitive pulling contests. Dr. F. H. Kelley, of Goldfield, then demonstrated how he had been able to train his riding horse, and explained how he had stimulated a great deal of interest in riding, in his home town.

On Friday morning, January 18, Dr. W. F. Guard gave a brief preliminary report on periodic ophthalmia, in which he outlined the project which is being followed in working on this disease. He demonstrated on a number of horses the method of examining the eyes for the purpose of detecting the various changes which result from attacks of the disease. The cooperation of veterinarians throughout the State is being asked in gathering information and in applying treatment, so that the number of cases on which accurate reports may be obtained may be more rapidly multiplied.

The paper by Dr. H. E. Bemis, entitled "Fundamentals Essential to a Proper Understanding of Sterility," particularly emphasized the need of a more thorough understanding of the anatomy and physiology of the genital tract and of the functions

of the various accessory organs, as well as the importance of feeding and management. This paper was supplemented by a demonstration, under the direction of Dr. H. S. Murphey and his assistants in the Department of Anatomy, which showed the relation of the changes taking place in the genital tract of the cow in various stages of the estrous cycle and during pregnancy.

In the small animal clinic Dr. C. H. Covault discussed and demonstrated the proper methods of handling small animals and administering treatment. He then discussed a number of actual cases, which represented our most frequent problems, such as internal and external parasites, canine distemper, its complications and unusual forms. Following this, he demonstrated his method of spaying. A number of anesthetized experiment animals were available for the use of those who wished to perform the operation.

After lunch Dr. Chas. Murray, of the Department of Veterinary Investigations, demonstrated the entire equipment necessary for making the agglutination test for the diagnosis of white diarrhea in chickens. He explained the test and discussed its possibilities and limitations, particularly with reference to those problems which the practitioner may meet in trying to conduct the test in his own locality.

The final lecture and demonstration was made by Dr. John W. Adams, in which he discussed "The Use of the Actual Cautery in the Treatment of Chronic Inflammations of Bones and Tendons." His discussion was followed by the use of the cautery in firing cases of bone spavin, ring-bone and chronic tendinitis.

During the Conference the laboratories were open for the use of anyone having special problems which he wished to investigate.

H. E. Bemis.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

The twenty-seventh annual meeting of the Minnesota State Veterinary Medical Association was held in St. Paul, Minn., January 16-17, 1924, with 150 members in attendance. President R. J. Coffeen, of Stillwater, Minn., presided.

The first session was taken up with routine business including committee reports. Under new business, the matter of raising the dues in order to provide for two meetings a year was discussed. It was voted to raise the dues to $5.00 and to continue to have two meetings a year.

The election of officers resulted as follows: Dr. R. L. West, Waseca, President; Dr. B. L. Cook, Farmington, First Vice-President; Dr. D. I. Remington, Tracy, Second Vice-President; Dr. C. P. Fitch, St. Paul, Secretary-Treasurer.

Board of Trustees: Dr. C. A. Nelson, Brainerd; Dr. Harry Evenson, Sacred Heart; Dr. C. G. Jennings, Morris; President West and Secretary-Treasurer Fitch.

The first paper was by Dr. W. L. Boyd of University Farm, St. Paul, entitled "A Study of the Methods of Handling Retention of the Fetal Membranes." This paper gave the up-to-date procedures in this rather common condition and was illustrated by lantern slides.

Major Robert J. Foster, Veterinary Corps, United States Army, Fort Riley, Kansas, gave an excellent paper on "The Post-War Development of the Army Veterinary Service." This paper pointed out the developments which occurred in the Veterinary Corps of the United States Army preceding and following the passage of the act giving rank to the veterinarians in the army. The speaker stated that at the present time, the Veterinary Corps was in an excellent condition. He further stated that there were still many vacancies in the reserve corps and urged the men to apply. Several applicants were received. This paper was followed by a short talk by Captain H. W. Savage, of the Veterinary Corps, Fort Snelling, Minnesota, on "The Veterinary Officers Reserve Corps."

On the evening of the first day the Honorable Arthur E. Nelson, Mayor of St. Paul, gave a most admirable address of welcome. He pointed out the relationship that exists between the country and the city, and especially that one was dependent upon the other for its own welfare. This address was responded to by Dr. R. L. West, of Waseca.

The next paper was by Professor A. D. Hirshfelder, Professor of Pharmacology, University of Minnesota. His subject was "Circulatory Stimulants with Special Reference to Camphorated Oil." Professor Hirshfelder has been studying a number of the drugs which have been commonly used for circulatory stimulants. He showed blood-pressure tracings from a horse which had been injected with camphorated oil and also with strychnin. Very little if any effect was noted for these drugs which are commonly used as circulatory stimulants. Tracings, however, made on a horse which was injected intravenously with adrenalin, showed a very decided effect from this drug.

The next paper was by Dr. V. A. Moore, Dean, New York State Veterinary College, Cornell University, Ithaca, New York, who spoke on "Some Important Facts to be Carefully Considered in the Control of Tuberculosis." Dr. Moore stated that the present campaign for the eradication of this disease was proceeding satisfactorily, but that great care must be taken in respect to the follow-up-work, and if this was not carefully and conscientiously done, that a great deal of the preliminary efforts would be in vain.

On Thursday the first paper was by Dr. W. A. Billings, Extension Veterinarian, University Farm, St. Paul, who spoke on "The Work of the Extension Veterinarian." The problems and difficulties of this work were outlined to the practitioners, and their assistance was earnestly solicited in order to make the extension veterinary service a success. Dr. Billings stated that he had no idea of doing any practice, that his work was purely educational, and was done in cooperation with the local practitioners.

"The Physiology of the Fetus and New Born" was presented by Dr. E. A. Hewitt, University Farm, St. Paul.

President C. H. Stange and Secretary H. Preston Hoskins, of the American Veterinary Medical Association, were present and gave short talks.

"Some of the New Medical Preparations" was the subject of the paper by Dr. N. S. Mayo, of Chicago. In the afternoon Dr. A. Eichhorn, of Pearl River, New York, spoke on "The Control of Some of the Important Infectious Diseases of Animals."

Dr. C. A. Nelson, of Brainerd, gave a paper on the subject, "For the Good of the Profession." He pointed out that the private practitioner needed better and more efficient advertising in order to bring his work properly before the people.

The meeting ended with a short discussion on "Disease in Cattle Produced by Feeding Sweet Clover," by Dr. C. P. Fitch, University Farm, St. Paul.

C. P. Fitch, *Secretary-Treasurer.*

OKLAHOMA STATE VETERINARY MEDICAL ASSOCIATION

The Oklahoma State Veterinary Medical Association held its winter meeting at the Huckins Hotel, Oklahoma City, January 16-17, 1924. The meeting opened with a business session, with Dr. F. F. Meads presiding. A spirited discussion was immediately

entered into, which terminated in a closer cooperation in the ranks of the Association, with more harmony prevailing than heretofore. President Meads pointed out several serious problems confronting the profession today, and his keenly analytical mind suggested means by which these problems might be met.

A number of very excellent papers were read at the meeting, and the discussion of these showed the deep interest of the members in the subjects presented. A very enjoyable banquet was held at the hotel. Entertainment was furnished by a colored glee club, consisting of twenty-seven voices. Dr. Walter J. Crocker, of Ft. Worth, Texas, acted in the capacity of toastmaster, and very fittingly introduced a number of splendid after-dinner speakers, chief among whom was Dr. Bradford Knapp, President of the Oklahoma A. & M. College.

The Oklahoma veterinarians, as well as many of their neighbors, are looking forward to the coming summer meeting with much interest. This meeting will be held in Medicine Park, and it is the intention to have it extend throughout the entire week, with a short program each morning, the remainder of the time to be dovoted to pleasure and recreation.

Facilities here make it a nice place to spend a week in the Wichita mountains, and the indications are that we will have a good attendance and a real home-gathering of veterinarians. It is hoped that the veterinarians of the Southwest will turn out in full and enjoy themselves for a week. There is no question but that they will feel well repaid for their trouble.

Officers elected for the coming year are: President, Dr. C. R. Walters, of Tulsa; Vice-President, Dr. R. W. Bowerman, of Hennessey; Secretary, Dr. T. O. Booth, of Oklahoma City; Treasurer, Dr. F. Y. S. Moore, of McAlester.

L. B. Barber, *Secretary.*

MAHONING VALLEY VETERINARY CLUB

A combined meeting of the Jefferson County Medical Association and the Mahoning Valley Veterinary Club was held at Reynoldsville, Pa., on Jan. 17, 1924.

Dr. L. A. Klein, Dean of the Veterinary School of the University of Pennsylvania, addressed the meeting on the subject of, "The Relation of Bovine Tuberculosis to the Milk Supply." This combined meeting was the first of its kind in this section

and it helped enormously in getting acquainted with the members of our sister profession and in raising the standing of the veterinarians of the Mahoning Valley Veterinary Club.

C. M. CHRISTY, *Secretary.*

COLORADO VETERINARY MEDICAL ASSOCIATION

In point of interest the twenty-first annual meeting of the Colorado Veterinary Medical Association, held at Denver, January 23-24, was probably the most successful yet held by the organization. Much attention was given to the question of advertising the veterinary profession, papers being presented on this subject by Dr. A. N. Carroll and Mr. G. W. Lynn, the latter being Secretary of the Master Plumbers' Association of Denver. This part of the program was most discussed by the members present and seemed to create the greatest interest. It resulted in instructions to the Executive Committee to carry on a definite program of advertising during the following year.

Dr. Maurice C. Hall, of the Zoology Division of the United States Department of Agriculture, presented an excellent discourse on "Infant Mortality," in which he pointed out that the subject of infant mortality in animals is still at the stage represented by human infant mortality in 1870, at which time the subject was just beginning to be discussed. He pointed out that the losses in young animals were extreme and that the present blindness was not justified. Dr. Hall also gave some demonstrations and a discussion on anthelmintic medication for small animals.

Dr. Cecil Elder read a paper on the injection of cattle with *B. tuberculosis* (avian) and the results of subsequent tuberculin tests in which the detailed experiments carried on under his direction showed conclusively that cattle could be infected with the avian organism, following which they had reacted to certain of the tuberculin tests.

Paratyphoid dysentery in lambs was discussed in a talk by Dr. Floyd Cross, of the Section on Veterinary Pathology, Colorado Experiment Station. He detailed an outbreak of this disease in which some 30,000 lambs were involved with a loss of approximately 7%. *Bacillus paratyphosus* B. was isolated and subsequent work showed that the organism produced symptoms and lesions typical of the original disease. Experiments also showed that fasting lambs was the chief factor in predisposing to this

condition, healthy, well-fed lambs being susceptible only after the administration of excessive doses, whereas those fasted for 48 to 72 hours contracted the disease and died after the administration of small numbers of the organism.

Dr. M. J. Dunleavy read a paper in which he described the endurance races of 1922 and 1923, urging the great value that might be obtained from these races. He stated that they showed conclusively that the well-bred horse had much greater endurance than the mongrel. This was so marked that the rules did not now allow anything but pure-bred animals to compete.

"The Clinical Significance of Inflammation" was discussed by Drs. H. E. Kingman and James Farquharson, in which they upheld the principle that both inflammation and fever were basically desirable processes and indicated reaction on the part of the tissues.

Dr. Geo. H. Glover reported on the United States Live Stock Sanitary Association meeting in Chicago. Dr. L. L. Glynn read a paper on "What the Bureau of Animal Industry has done in the San Luis Valley," and Dr. W. E. Williams on "Influenza or Mixed Infection in Swine."

The report of the Committee on Policy of the American Veterinary Medical Association was approved by the Association.

The following new members were elected: Drs. Crawford J. Hayden, Herman R. Niehaus, Leonard R. Pratt, George W. Reuter, Benj. F. Davis, Edward G. Le Donne, Harry C. Evers.

The following officers were elected for the new year: President, Dr. A. N. Carroll; First Vice-President, Dr. W. G. Blake; Second Vice-President, Dr. H. P. Scott; Secretary-Treasurer, Dr. A. G. Fisk. Excutive Committee: Dr. W. G. Blake, Dr. C. C. Stewart, and Dr. N. J. Miller.

I. E. Newsom, *Secretary.*

MICHIGAN AGRICULTURAL COLLEGE VETERINARY SHORT COURSE

The Veterinary Division of the Michigan Agricultural College conducted a very intensive and successful short course for veterinarians during the last week in January. It was an innovation in short courses for Michigan veterinarians in that it continued for a whole week with classes running on an hourly schedule the same as the regular classes in the Veterinary Division. Assisting in the project were the Detroit Department

of Health, the United States Bureau of Animal Industry, and the State Bureau of Animal Industry.

The attendance was approximately fifty. Of these, three were from without the state. One-third of the total number registered remained throughout the whole week. The majority of those attending were men who have been in active practice for several years. It is interesting to note also that the majority of those attending were veterinarians who belong to the Michigan State Veterinary Medical Association and who regularly attend its meetings as well as local association meetings. It is regrettable that the younger generation of practitioners and those who do not ordinarily attend association meetings did not avail themselves of the opportunity to become informed first-hand, of the latest developments in the profession.

No tuition was charged for the course. All those who desired to reduce expenses to the minimum had an opportunity to secure rooms in private homes in East Lansing, at a cost much less than prevailed in down-town hotels. Meals were moderate in price. Coming as it did at the time of the year when many of our Michigan roads were impassable, veterinary practice was at low ebb. Therefore, the expense of attending the short course was reduced to the point where the cost of transportation was about the most important thing standing between the practitioner at home and the short course at East Lansing.

The daily morning program consisted of one-hour lectures in milk inspection, meat inspection, poultry diseases and genital diseases of cattle. The afternoon sessions were given over to laboratory demonstrations and clinics in the same four subjects that were emphasized in the morning program.

In milk inspection such subjects were discussed as microscopic and plate counts, the hydrogen-ion score, the administration of milk control, care of milking machines and milk utensils, the part-time inspector and milk inspection ordinances. Professors L. H. Cooledge and G. L. A. Ruehle, members of the faculty of the Bacteriology Department of the Veterinary Division were assisted by Mr. C. H. Chilson, Director, Bureau of Food and Dairy, Detroit Department of Health; Mr. T. H. Broughton, Director, State Bureau of Dairying; and Mr. Howard Estes, Flint Department of Health.

Subjects pertaining to meat inspection were abattoir methods, meat inspection ordinances, the regional lymph-glands, infectious and parasitic diseases in relation to meat inspection. Dr. H. H.

Sparhawk, Chief Inspector, Detroit Department of Health and Drs. F. W. Chamberlain, W. H. Chandler, and R. A. Runnells, of the College, had charge of this work.

Poultry-house sanitation, bacillary white diarrhea, fowl cholera, fowl typhoid, tuberculosis, blackhead, coccidiosis, colds, chicken pox, and parasites were phases of poultry practice covered by Dr. H. J. Stafseth of the Bacteriology Department. He also demonstrated the agglutination test for bacillary white diarrhea, tuberculin testing of fowls, and held several autopsies on fowls.

Dr. E. T. Hallman, of the Pathology Department, Dr. F. W. Chamberlain of the Anatomy Department, and Mr. I. F. Huddleson, of the Bacteriological Department, conducted the program on Genital Diseases of Cattle, which consisted of illustrated lectures on the anatomy, physiology and pathology of the genital organs of cattle. Control methods and the serological tests for infectious abortion were given a prominent place on this program. Dr. E. T. Hallman, on two afternoons, had an excellent clinical program arranged. Each afternoon he presented five cows, some of which were to be examined for pregnancy and others for the cause of sterility. A large number of the visiting veterinarians availed themselves of the opportunity to examine these animals personally.

On Wednesday afternoon Drs. J. P. Hutton and E. K. Sales, of the Department of Surgery and Medicine, conducted a small animal clinic. On two occasions during the short course Dr. B. J. Killham, Chief Veterinarian of the State Bureau of Animal Industry, addressed the "student body"—once on the proper methods of making out tuberculin test charts and again on the relation of the practitioner to the state department.

In the evening of the first two days of the course, round-table discussions were held. At one of these Dr. H. M. Newton, United States Bureau of Animal Industry, in charge of hog cholera control work in Michigan, discussed swine diseases and vaccination legislation.

During the latter part of the course Dr. H. B. Raffensperger, parasitologist from the Chicago laboratory of the Bureau of Animal Industry, gave an excellent illustrated lecture on the ascaris and a lecture on miscellaneous parasites of domestic animals.

The only social events of the week were the banquet of the Capitol Veterinary Medical Association on Wednesday evening and a smoker held jointly with the county agents of Michigan on

Thursday night. Both were greatly enjoyed by practically every veterinarian registered for the short course. Dean Ward Giltner, of the Veterinary Division, presided at the latter. It is very gratifying to note the harmony that exists between the veterinarians and county agents in Michigan. It will be remembered that the county agents and veterinarians joined forces in this state last spring to defeat the "farmer-vaccination" bill.

R. A. RUNNELLS.

WISCONSIN SHORT COURSE FOR VETERINARIANS

The second annual Short Course for Veterinarians, held January 29 to February 1, inclusive, at the College of Agriculture, in Madison, proved to be a successful innovation in veterinary meetings, following the plan adopted last year of substituting practical laboratory exercises for the conventional type of program. The Short Course extended over three days and evenings, followed by a general clinic at Dr. West's hospital on the fourth day. According to those in charge there were exactly 143 veterinarians registered from 41 counties and three adjoining states. They represented 37.5 per cent of all licensed graduates in the state, so the attendance was excellent.

Upon arrival at Agricultural Hall we were met by Dr. F. B. Hadley, representing the University of Wisconsin, and Dr. O. H. Eliason, secretary of the Wisconsin Veterinary Medical Association, who registered and assigned us for the course. In order that each veterinarian might receive personal attention and instruction we were divided into two sections. Six different exercises had been planned and everyone had an opportunity to conduct all of them through assignment to the various laboratory sections.

THE LABORATORY EXERCISES

The laboratory work was under the supervision of members of the College staff, and included the following exercises: "Practice in Testing Serum for Bovine Abortion"; "Practice in Making Tests for Johne's Disease, Actinomycosis, and Equine and Avian Tuberculosis"; "Practice in Examining Feces for Parasites"; "Practice in Testing Milk for Fat." A feature of the hospital or clinical exercise was "Practice in Treating Dogs for Worms." Various anthelmintics were administered the first day. The following day the feces were examined, the dogs destroyed, and thorough autopsies held, followed by physical



Wisconsin Veterinary Medical Association at the Short Course for Veterinarians, University of Wisconsin, January 30 to February 1, 1924.

and microscopic examination of intestinal contents. Much real practical experience was gained in this work. The results were noted and recorded.

On the morning of the second day, R. S. Hulce, Associate Professor of Animal Husbandry, exhibited four lots of calves that had been reared on different types of rations. Detailed descriptions were given and by comparison of the animals exhibited the results of rations restricted in feed and water were clearly demonstrated. The most striking demonstration was that thrifty calves can be grown at reasonable cost on market milk without the addition of expensive feed supplements. The experiment to determine the effect of water on the appetites of young calves showed that no farmer who wishes to grow his calves rapidly and well can afford to neglect supplying them with plenty of water—the cheapest item in the feeding ration.

The culling of chickens was demonstrated by Prof. J. B. Hayes, of the Poultry Husbandry Department, in a most pleasing and instructive manner. He required each of us to try our skill at culling. Prof. Hayes holds that the head of the hen is a far better index to production than the body and legs.

The Literary Program

Dean H. L. Russell welcomed us to the University and urged our taking advantage of all it had to offer. He pointed out the interest which the University feels in the veterinary profession, the desire to assist it in every way possible, and his appreciation of its importance as vital to the success of the live stock industry of Wisconsin.

The literary program was most comprehensive in the variety of subjects considered. Since Wisconsin leads all other states in dairying, it quite naturally followed that the cow received much consideration. The eradication work on bovine tuberculosis was discussed at length. The outstanding contribution was the address of Hon. J. D. Jones, Jr., Commissioner of Agriculture. He presented the work of his department for the eradication of bovine tuberculosis in a clear, concise and forceful manner. In a most frank statement he described the difficulties encountered, as well as pointed out the success of the campaign.

With such ability and integrity as Commissioner Jones puts into the work, together with the able assistance of Dr. V. S. Larson, State Veteriharian, and Dr. J. S. Healy, Inspector-in-Charge for the Bureau of Animal Industry, the success of clean-

ing up the herds of Wisconsin is assured. The practitioners of Wisconsin are given a real part in the eradication work in that a fund is provided to pay indemnities for reactors to tests applied by them. This feature of the Wisconsin campaign is making possible the ultimate success in the badly infected districts of the southern counties. Dr. Larson outlined and discussed the regulations governing the work. Dr. Healy demonstrated the various tests and their interpretation at the clinic on Friday.

Dr. C. H. Stange, President of the American Veterinary Medical Association, was present on Tuesday evening and gave



WISCONSIN SHORT COURSE FOR VETERINARIANS
This section is at work in the bacteriological laboratory testing bovine blood serum to detect contagious abortion infection.

an illustrated address relative to the future of the profession. His talk was especially well received.

Dr. J. G. Hardenbergh, of the Mayo Foundation, at Rochester, Minn., and Dr. J. V. Lacroix, of Evanston, Ill., presented papers on canine diseases and treatment. Veterinary service as related to the meat packing industry was outlined by Mr. O. G. Mayer, of Chicago, Ill., while "Stable Ventilation Problems" were described by Mr. A. T. Logan, of Fort Atkinson, Wis. "Our Friends the Dumb Animals" was the subject of a most forceful plea for humane treatment of animals, both through entreaty and in pictures, by Dr. A. S. Alexander.

"Caricature in Human and Veterinary Medicine" took the audience back to the very beginnings of things medical. It was

an illustrated lecture by Dr. W. S. Miller, who enjoys the distinction of having attracted national attention for original research work in histology after he had reached the prescribed age limit of three-score years and ten. "Diseases of Animals in Relation to Public Health" was the subject discussed by Dr. W. D. Stovall. "Vasectomy as a Veterinary Operation" was presented by Dr. B. L. Warwick, and brought out some spirited discussion, led by Dr. H. D. Pattison of Beloit. Dr. J. T. Purcell, B. A. I. Inspector-in-Charge of hog cholera control work, outlined "Hog-lot Sanitation," describing the McLean County system, and urging its adoption. Motion pictures illustrating the "Physiology of Reproduction" and "Normal and Abnormal Childbirth" added variety to the program.

The Annual Meeting

The business session of the ninth annual meeting of the Wisconsin Veterinary Medical Association was held on Wednesday evening. It was presided over by Dr. G. H. Harland. The newly elected officers are Dr. W. R. Swan, Stevens Point, President; Dr. J. P. West, Madison, Vice-President. It was decided to accept the cordial invitation of Dr. A. F. Schrage to hold the semi-annual or summer meeting at Plymouth.

The Clinic

Dr. T. H. Ferguson had charge of the large animal clinic while Dr. B. L. Warwick operated on the small animals. Here our old friend the horse was given consideration, which unfortunately cannot be said of many recently held veterinary clinics.

J. S. Koen, *Reporter.*

CAPITOL VETERINARY MEDICAL ASSOCIATION

The Capitol Veterinary Medical Association was reorganized at East Lansing, Mich., January 30, 1924. Officers were elected as follows: President, Dr. L. A. Wileden, Mason, Mich.; Vice-President, Dr. G. C. Moody, Mason, Mich.; and Secretary, Dr. A. E. Erickson, Charlotte, Mich.

Following the business session a conference was held, attended by representatives of the various local veterinary associations throughout the State. The purpose of this conference was to agree upon dates for meetings during 1924, so as to avoid conflicts as far as possible. The various associations were represented as follows:

Capitol Vet. Med. Asso., Dr. L. A. Wileden, President; Western Mich. Vet. Med. Asso., Dr. G. M. Thorndike, President; Southwestern Mich. Vet. Med. Asso., Dr. Geo. McCollister, Secretary; Central Mich. Vet. Med. Asso., Dr. C. C. Mix, President, and Dr. W. N. Armstrong, Secretary; Southeastern Mich. Vet. Med. Asso., Dr. H. Preston Hoskins, Secretary; Thumb Vet. Med. Asso., Dr. J. E. Wurm, President; Michigan-Ohio Vet. Med. Asso., Dr. A. J. Kline, President.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS—MISSISSIPPI VALLEY DIVISION

The regular meeting of the Mississippi Valley Division of the National Association of B. A. I. Veterinarians was held at Dr. J. W. Joss' office, in the Federal Building, East St. Louis, Ill. on Feb. 2, 1924. President Dr. L. C. Stewart called the meeting to order.

Dr. Stewart read a paper and demonstrated two charts on "Post-Mortem Inspection," after which a discussion ensued, participated in by Drs. Timmerman, Maloney, Pease, Joss, Walls, and Stewart.

Following this the subject of "Abscesses in the Cervical Glands and Necks of Hogs" was discussed by Drs. Lambert, Blount, Stewart, Walls, Jenison, Pease, Joss and Timmerman. A few remarks were made on hog cholera by Drs. Surring and Stewart.

It was moved, seconded and carried that the discussion on abscesses be brought up again at the next meeting. A paper on "Tuberculosis and Actinomycosis" will be read at the next meeting, by Dr. M. L. Crans.

Drs. Timmerman and Garleb were appointed as a Committee to secure a suitable office for the holding of every other meeting in St. Louis, Mo. The following veterinarians were present at the meeting: Drs. S. L. Blount, G. H. Bruns, W. L. Cohenour, E. A. Garleb, T. T. Hartman, F. E. Hill, J. S. Jenison, J. W. Joss, R. C. Lambert, A. J. Maloney, J. F. Pease, W. M. Robertson, L. C. Stewart, R. E. Surring, F. S. Thurmon, H. J. Timmerman and A. C. Walls.

G. H. Bruns. *Secretary.*

ALABAMA SHORT COURSE FOR GRADUATE VETERINARIANS

For the first time in the history of the college, a practitioner's course has been given, at the College of Veterinary Medicine, Auburn, Alabama, Feb. 4-9, 1924. The main or chief lines of work covered the diseases of dogs and cats, and the diseases of poultry. Quite a number of lectures and demonstrations were given on the diseases of cattle, mules, horses and swine.

Dr. J. C. Flynn, canine specialist, of Kansas City, Missouri, delivered two or three lectures each day for five days on the following diseases of dogs: Distemper, ear canker, intestinal parasites, cystitis, skin diseases, corneal ulcerations, poisons, black tongue, fright disease, rachitis, and rabies; and in cats: Contagious gastro-enteritis, distemper, ptomaine poisons, parasites, mange, and ring-worm.

Dr. Flynn gave the following surgical and clinical demonstrations: Spaying bitches and cats, treating a dog poisoned with strychnin, clinical examination of one with dumb rabies, one with furious dumb rabies, one with sarcoptic mange, one with prolapsus of the rectum, one with distemper, one with running fits, and one cat with mange.

Dr. B. F. Kaupp, poultry specialist, of Raleigh, North Carolina, gave the following lectures and demonstrations: Complete autposy of the chicken, naming all parts, and commenting on the digestive processes; external and internal parasites of poultry; fowl typhoid, crop-bound, paralysis, botulism, tuberculosis, and roup. He also gave demonstrations on caponizing and giving anesthetics to poultry.

Dr. Peter F. Bahnsen, of Atlanta, Georgia, gave practical methods of restraining mules and horses with a rope, illustrating his methods of making halters, tieing up front and hind limbs, casting, and the quick and usable way of making a hippo-lasso with a rope.

Dr. Elmer Lash, of Washington, D. C., by lecture and charts, reviewed the progress of tuberculosis eradication by the federal government and the various states.

Dr. R. S. Sugg, gave a practicum on taking samples of blood from cattle, hogs, and chickens, for the agglutination test. During the week he carried on complete tests for infectious abortion in cattle, and in hogs, and for the *Bacillus pullorun* in chickens.

Dr. N. G. Covington gave a complete post-mortem practicum on cow and horse cadavers. Dr. F. D. Patterson gave a very

interesting lecture on feeds and feeding of dogs. Dr. I. S. McAdory, with several fresh specimens, gave a very interesting lecture and demonstration on the generative apparatus of the cow.

Dr. C. A. Cary lectured and gave demonstrations, with animals and organs, on infectious abortion, cervicitis in cows, ovarian cysts, retained corpus luteum in cows, sterility, and udder diseases in cows. He also gave a clincial demonstration of the Iowa method of passing a stomach-tube in swine. By special request, he performed a roaring operation on a mule.

During the course, three moving pictures were run: "Clean Hearts and Herds," "Exit Ascaris," and Dr. Flynn's movie of "Furious Rabies in Dogs." After Dr. Flynn's lecture on rabies a rabid animal was brought before the audience and exhibited.

During the week, two dogs with dumb rabies and one dog halfway rabid, and with a paralyzed lower jaw, were exhibited at the clinics.

The Alabama Veterinary Medical Association held only a business session. The following officers were elected for the ensuing year: Dr. J. S. Cook, Union Springs, President; Dr. J. R. Sullivan, Montgomery, Vice-President; Dr. C. A. Cary, Auburn, Secretary-Treasurer.

On the night of February 8, the Students' Veterinary Medical Association gave a banquet, at which Dr. Peter F. Bahnsen made a most interesting talk on the subject of "How to Succeed as a Veterinarian." Success, he said, was obtained by hard work, steadfast and continued service.

There were 33 veterinarians in attendance at the short course and every man went away feeling that he had been repaid with knowledge and pleasure, declaring he would come back for a like course next year.

The new college buildings and equipment gave ample facilities for illustrating and handling all the work in the course. Some of the new things brought out were: First, Dr. Flynn's idea of fright disease being caused by some kind of poison in spoiled foods, a sort of forage-poison or botulism-like poison. Second, Dr. Flynn's method of spaying a cat and a bitch. Third, a treatment for sore mouth or black tongue that originated with Dr. L. K. Ogletree, of Enterprise, Alabama. This treatment is as follows:

Oleum terebinthinae	2 drams.
Cupri sulphas	2 drams.
Aqua dest., q.s.	8 ounces.

Mop out the mouth 3 or 4 times a day with this. Sometimes he uses the following, alternating its use with no. 1:

Potass. chloras	2 drams.
Tinct. ferri chlor.	2 drams.
Aqua dest., q. s.	8 ounces.

There were four veterinarians present who had been using this prescription for a year or more. One of them had treated as high as 50, another 60, with only 2 to 4% losses. One of the veterinarians claimed that he used prescription no. 1 exclusively, and got equally good results. Dr. Ogletree advised feeding the dog on fresh, raw, Hamburger steak; and he said that in the course of three to four days they will be eating and improving.

C. A. CARY.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS—ILLINOIS DIVISION

The regular monthly meeting of the Illinois Division of the National Association of Bureau of Animal Industry Veterinarians was held in the Government office of one of the local plants, at Chicago, February 4, 1924. There was an unusually large attendance and much interest shown in the work of the Association. Some of the subjects discussed follow:

Reclassification of the civil service employes, which will come up for consideration during this term of Congress. Ways and means for getting proper reclassification for the men in the field. The retirement bill was considered also, with a view to getting a more generous pension fund and lowering the age of optional retirement.

The next meeting will be held Feb. 19, 1924.

I. A. LUCAS, *Secretary*

KENTUCKY VETERINARY MEDICAL ASSOCIATION

The winter meeting of the Kentucky Veterinary Medical Association, held at Hopkinsville, Ky., February 6-7, 1924, proved as interesting and valuable as had been anticipated. The attendance was unusually good. The session opened Wednesday morning with a hearty welcome to the city of Hopkinsville by Hon. J. T. Wall. Dr. W. H. Simmons, State Veterinarian, responded.

Dr. H. Gieskemeyer, President, in his address thanked the Association for the honor they had bestowed upon him, in selecting him as their president, and outlined the progress made by the Association since its reorganization in 1912.

Then followed a paper by Dr. Wm. Coffee, of La Center, on "Malignant Edema," which was followed by a discussion by Dr. C. H. Ellis, of Barlow, and Dr. R. F. Fisher, of Paducah. Some very interesting points were brought out.

The afternoon session was opened by Prof. T. R. Bryant, of the University of Kentucky, who explained the purpose and accomplishments of agricultural extension work in Kentucky.

The important matter of "The Eradication of Bovine Tuberculosis in Kentucky" was discussed by Dr. W. H. Simmons and Dr. Wm. F. Biles. Among other things, Dr. Simmons stated that in 1920 the percentage of reactors in Kentucky was 2.5%; in 1921, 2.7%; in 1922, 2.4%; in 1923, 1.7%; showing a gradual decrease in the number of reactors.

At 6 p. m. a delightful banquet was served in the Rotary-Kiwanis room of the Hotel Latham. Dr. W. W. Dimock was toastmaster for the occasion.

The first paper on the program for the second day was read by Dr. R. F. Fisher, of Paducah, on "Infectious Mammitis in Cows." This paper was a very interesting one, and the discussion by Drs. W. W. Dimock, R. T. Jett and H. Gieskemeyer brought out some very interesting phases of the disease.

Dr. H. Gieskemeyer, a member of the Kentucky State Board of Veterinary Examiners, reviewed the progress and function of that board. Dr. W. W. Dimock gave a summary of the various problems confronted at the Experiment Station. He spoke of a disease now existing among pregnant ewes. He stated that quite a few ewes die of this disease. He further stated that he believed that they would soon become acquainted with all the factors of this disease. The hearing of the reports of the various committees closed the morning session.

The Kiwanis Club of Hopkinsville entertained the members of the Association at luncheon.

Dr. T. P. Polk, of the University of Kentucky, gave a very interesting talk and showed a motion picture on "Ascarids in Swine." Dr. R. T. Jett cited a very unusual outbreak of forage poisoning in his county. This paper was discussed by Dr. W. W. Dimock.

The following officers were elected for the year 1924: President,

Dr. W. W. Dimock, Lexington; First Vice-President, Dr. M. H. Dollor, Danville; Second Vice-President, Dr. J. R. Hill, Hopkinsville; Third Vice-President, Dr. F. Stevenson, Princeton; Secretary- Treasurer, Dr. J. A. Winkler, Newport.

While this meeting was not so largely attended as some other winter meetings held, keen interest in all papers was evident and the same goodfellowship predominated. Frankfort was selected for the summer meeting to be held July 9-10, 1924. The invitation to meet at Frankfort was extended by the B. A. I. force, through the Inspector-in-Charge, Dr. Wm. F. Biles.

J. A. WINKLER, *Secretary.*

KANSAS VETERINARY MEDICAL ASSOCIATION AND CONFERENCE OF KANSAS VETERINARIANS

The twentieth annual meeting of the Kansas Veterinary Medical Association was held jointly with the third annual conference at Manhattan, Kansas, in the veterinary buildings of the Kansas State Agricultural College, February 6-7-8, 1924. The program was of more than ordinary value and interest to the veterinary practitioner. The following were some of the outstanding contributions:

"The American Veterinary Medical Association," by its Secretary, Dr. H. Preston Hoskins.

"The Veterinary Practitioner's Place in the Agricultural Program" (Illustrated), by Dr. Robert Graham, University of Illinois. (To be published in the JOURNAL.)

"Conditions Affecting the Breeding Efficiency of Cattle" (Illustrated), and also a lecture and demonstration on "Sterility and the Physical Examination of the Genitals of Domesticated Animals," by Dr. W. L. Boyd, University of Minnesota.

"The Present Status of Abortion Disease in Cattle, Its Spread, Influence of Male and Control," by Dr. W. E. Cotton, Federal Experiment Station.

Other splendid papers and clinical numbers presenting special features, such as laboratory diagnosis, poultry diseases, etc., were given.

The following officers were elected for the coming year at a business session held at the close of the meeting: President, Dr. H. C. Gale, Clyde; Vice-President, Dr. C. A. Bliss, Osborne; Secretary-Treasurer, Dr. Chas. Bower, Topeka; Executive Board member, Dr. J. H. Burt, Manhattan.

Dr. R. R. Dykstra, Dean of the Division of Veterinary Medicine at the college, extended an invitation to the Association to meet again at Manhattan next year at the time of the Annual Conference of Kansas Veterinarians. This met with favor and the invitation was accepted unanimously.

I. J. PIERSON, *Secretary.*

VETERINARY ASSOCIATION OF MANITOBA

The thirty-fifth annual meeting of the Veterinary Association of Manitoba, since its inauguration by legislation, was held at the Manitoba Agricultural College, Winnipeg, February 7, 1924. There was a good attendance, there being about fifty members present.

The morning session commenced at 10 a. m., with an address from the President, Dr. J. R. Fisher, followed by the report of the Secretary-Treasurer and Registrar, and discussion of the affairs of the Association.

The Register showed 138 active members and nine honorary members, and the Registrar reported that all veterinary surgeons practicing the Province of Manitoba were registered. The financial statement, after paying all expenses for the year 1923, showed a balance of $490 to the credit of the Association.

The election of officers for the year 1924, resulted as follows: President, Dr. A. Savage, Manitoba Agricultural College, Winnipeg; Vice-President, Dr. N. V. James, Gladstone; Secretary-Treasurer, Dr. Wm. Hilton, Winnipeg; Board of Examiners, Drs. A. Savage, J. B. Still of Winnipeg, and Dr. H. N. Thompson, of Virden; Council, Drs. Wm. Hilton, A. Savage, J. B. Still, of Winnipeg; J. A. Munn, of Carman; J. Fisher, Brandon; H. N. Thompson, Virden, N. V. James, Gladstone.

Mr. J. H. Evans, Deputy Minister of Agriculture for the Province of Manitoba, addressed the meeting at the luncheon which was held at the college.

During the afternoon session, practical demonstrations were given by Dr. A. L. Alton, Portage la Prairie; Dr. N. V. James, Gladstone; Dr. J. R. Fisher and Dr. H. H. Ross, Brandon; Dr. A. Savage, Dr. W. H. Hilton, Dr. T. G. Sprague and Dr. R. R. Ormiston, of Winnipeg.

The meeting was one of the most successful in the history of the Association.

J. B. STILL, *Secretary.*

ARMY VETERINARY SERVICE

REPORT OF THE SURGEON GENERAL

The report of the Surgeon General, for the fiscal year ending June 30, 1923, has been printed and distributed. Reference to it reveals that approximately thirty-one pages are devoted to matters concerning the Veterinary Corps. The statistics given in the report have been compiled from the sick and wounded records for the year 1922. The 1923 report shows a total of 10,229 horses and 4770 mules admitted to sick report for all causes, with a loss by death of 891 horses and 372 mules; the death rate per thousand admissions being 87.1 horses and 77.98 mules.

These figures are higher than those shown in the 1922 report, in which the reported death rate per thousand admissions was 59.85 horses and 61.19 mules. This increase in death rate has undoubtedly been the result of an insufficient veterinary personnel, lack of adequate hospital facilities at many stations, and the increasing average age of the animals, with the many ailments incident to senility. According to the Veterinary Bulletin for December 12, 1923, it is generally conceded that the lack of necessary funds for the replacement of public animals is causing considerable concern among all "horsed" units of the army.

On June 30, 1922, there were 158 veterinary officers in the Veterinary Corps of the regular army, and on June 30, 1923, there were but 125 officers, with one vacancy in the corps, although the National Defense Act, as amended, authorized a Veterinary Corps of 175 officers. It has been estimated that the 126 veterinary officers will be able to render sufficient service for an army having approximately 28,000 animals. As a matter of fact, the animal strength for 1922 averaged 51,768, which would indicate that the present Veterinary Corps should have almost twice its present strength, in order to render adequate veterinary service.

A number of communicable diseases made their appearance among the horses and mules during the year 1922. There were 117,021 animals tested for glanders, of which 32 were destroyed, as a result of positive intradermic mallein reactions or serological tests. There were nine cases of infectious anemia (swamp fever) destroyed in 1922, at Robinson Quartermaster Intermediate

Depot. There were reported during 1922 only 33 cases of influenza, resulting in the death of one animal. The incidence of strangles during the year was practically negligible, there being only 33 cases reported, with no deaths.

Epizootic lymphangitis occurred only in the Philippine Department, where 104 cases were reported. Ulcerative lymphangitis was reported in three animals, of which one died. Of 34 cases of tetanus, which occurred among army animals, eight died and five were destroyed. There were 13 cases of forage poisoning, diagnosed clinically, with 11 deaths. Piroplasmosis was reported in five horses and one mule from the Panama Canal Department. There were six suspected cases of mange, but in none of these were mange mites demonstrated. Pneumonia was responsible for the death of six horses and six mules during the year.

The report contains detailed records of the various diseases and conditions encountered, infectious and non-infectious, in both horses and mules, the admissions, disposition, either by death or return to duty, the severity of the cases, total days lost from duty and the average days lost for each admission.

The army veterinarians may well be proud of the showing they have made, in preserving the health and efficiency of the animals of the army, under conditions that are far from what they should be.

DR. HOLLINGWORTH PUTS UTICA ON THE MAP

Dr. W. G. Hollingworth, of Utica, N. Y., is Chief Veterinarian of the Department of Health of the City of Utica. The *Utica Observer-Despatch*, for Sunday, February 3, 1924, contained a feature article entitled, "How Uticans' Meat Market Supply is Guarded." About a half-page was devoted to the article, which was illustrated with photographs of Dr. Hugh H. Shaw, Health Officer, and Dr. Hollingworth and his staff of five assistants. On January 9, Dr. Hollingworth delivered the principal address before the Utica Kiwanis Club. His subject was "The Veterinarian's Duty to the Public Health." He reported that since 1922 it has been necessary to condemn a half million pounds of beef, pork and veal. Dr. Hollingworth also stated that many other cities, having heard of Utica's system, had sent officials to Utica to look over the work of the meat inspection bureau, with a view to adopting a system patterned after that of Utica. Splendid work, Dr. Hollingworth.

WOMEN'S AUXILIARY TO THE AMERICAN VETERINARY MEDICAL ASSOCIATION

With the coming of the New Year there are always new obligations to be met; some are very small, some large, but it is the combination of these small obligations that often does the most good.

We are starting a new fiscal year with the Women's Auxiliary, and, very soon, notices for dues will be sent out. Let us all respond promptly, in order that the good we are able to do may be increased.

The Auxiliary has helped a needy veterinarian and assisted three senior veterinary students to finish their education. Can we afford not to be one of those to help in this work?

The dues are $1.00 a year, and there is an additional initiation fee of fifty cents for new members. These dues are used for three purposes: First, the expense of maintaining the Auxiliary, such as postage, stationery, etc. Second, an emergency fund, to give necessary assistance to the family of any veterinarian who has been temporarily or permanently disabled. Third, the loan fund, the rules of which were published in the February issue of the JOURNAL.

Last September, owing to the Secretary having been unable to attend the meeting, and the supplies being late in reaching Montreal, receipts were not issued for the dues received there. These receipts will be sent with those for the 1924 dues.

There are practically one hundred members of the Auxiliary. When we think of the many women who are eligible for membership, all of the wives, sisters, and mothers of members of the A. V. M. A., as compared with those who belong to the organization, it seems we have a mere handful. Will not each member try to get at least one new member before the next meeting?

You may fail to get your notice but will you not send your dues to the Secretary, anyway, in order to help a good cause?

(MRS.) R. P. MARSTETTER,

College Station, Texas. *Secretary.*

HORSE BREEDING GROWS

Breeding of thoroughbred horses is increasing, according to statistics compiled by the Jockey Club. In 1923, 2,648 foals were registered, or 383 more than in 1922 and 908 more than in 1913.

MISCELLANEOUS

DR. TUCK VISITS EDINBURGH

President Stange appointed Dr. R. W. Tuck, of London, England, as the representative of the American Veterinary Medical Association to attend the 100th anniversary of the foundation of the Edinburgh Veterinary School, November 27-28, 1923. Dr. Tuck attended, and the following letter describes his visit.

"I left London on the evening of November 26th. A bitter wind was drifting the driving snow. Fog was everywhere, and I shuddered to think of what would be my fate in the morning, as I stood upon the station platform at King's Cross awaiting the Scottish Express. The fog caused the train to be a little late, and as the sleeper was crowded, the narrow passageway caused considerable difficulty in locating my berth, or, perhaps, I should say "room," as English sleepers are not double decked, such as we have in America, but consist of a small room with a single bed, collapsible washstand, etc. The bed stands crosswise of the room, so that the passenger rides crosswise of the train. I was aroused in the morning, at 6:30 a.m., by the conductor, and told to prepare for debarkation at Edinburgh, the train being on time. What was my surprise on stepping from the train to find a nice, warm, bright day and no appearance of snow or frost.

"Upon arriving at Edinburgh, I immediately proceeded to the North British Hotel and inquired for Mr. Bullock, the genial secretary of the Royal College of Veterinary Surgeons, who had called me by phone, in London, a few days previous and invited me to accompany some London veterinary celebrities who were to leave London by the morning train. Unfortunately I was unable to leave until night. Mr. Bullock took me in charge, and was of very great assistance in making my visit to Edinburgh one of pleasure.

"At the hotel I had the pleasure of meeting Lady and Sir John McFadyean, Sir Stewart Stockman, Professor Buxton of Cambridge, and a number of others. All seemed pleased that the American Veterinary Medical Association had sent a representative. In this connection I might state that only one other foreign country was personally represented—Denmark— by Professor Ellinger, of Copenhagen.

"The first exercises were held in the College, where Dr. O. Charnock Bradley held an "At Home," during which Sir John McFadyean presented to the college, in the name of Emeritus Professor Duncan McEachran, F. R. C. V. S., Quebec, Canada, a portrait of William Dick, the founder. This affair was carried out with considerable pomp, and the veterinary surgeons made a very fine showing, and gave one the impression that the veterinary profession in Scotland was on a very high plane. Sir John McFadyean said many very nice things about Professor Dick, and gave a graphic account of the early days of veterinary education.

"The second item on the program was at the University, in the anatomy classroom, with Principal Sir Alfred Ewing presiding. The main event was an address on "Comparative Pathology; Its Biological and Economical Significance," by Professor Theobald Smith, Director of Animal Pathology, Rockefeller Institute, Princeton, N. J. The chairman, when introducing Professor Smith, called attention to his research work, particularly in connection with human and bovine tuberculosis. The principal theme of Dr. Smith's address was man-made diseases, and particularly their biologic and economic importance. This meeting was well attended, and there was considerable applause.

"The third event in the evening was held at the city chambers, where the Lord Provost, Magistrates, and Council of the city held a reception. This affair was the *piece de resistance* of the celebration. The Lord Provost was attired in his scarlet velvet, trimmed with gold, as were his fellow officials. There were probably a dozen of these gorgeously attired officials, bedecked with official jewels and other insignia of their offices. Their red velvet, gold trimmings and ermine made a rich setting for the ladies, who were attired in the height of fashion and backed by the gentlemen, most of whom were in full dress. To enhance the scene, the building was handsomely decorated with flowers and plants and trimmed with many-colored flags. In fact, one was led to wonder whether he had not dropped into a reception given by some Bond street bankers instead of a veterinary celebration.

"At midday on Wednesday, a large gathering, consisting of veterinarians, students and the general public, met in the hall of the college, in Summerhall Square, and listened to an oration by Sir John McFadyean. The Duke of Athol, who presided, gave a brief address by way of introducing Sir John, who read a paper giving an account of the founding of the earliest veterinary colleges, those of Lyons and London, gave some instances showing the advantages of the veterinarian to the live stock owner, referred to the value of government aid to veterinary colleges, and to the object which William Dick set before himself, namely, to provide Scotland with veterinary surgeons educated up to the highest standard then possible.

"In the evening, Lort Forteviot presided at a reunion dinner held in the hall of the Royal College of Surgeons. Lord Provost Sleigh proposed the toast "Royal Veterinary College," and paid a splendid compliment to the valuable work rendered veterinary education by Professor Dick. Several other toasts were given, and all greatly enjoyed the sumptuous repast and then returned home to await the coming Bazaar."

(Signed) R. W. Tuck.

CLINICAL THERMOMETER CONFERENCE

A Clinical Thermometer Conference was held at the Bureau of Standards, January 30, 1924, to consider Senate Bill No. 1671, which has been introduced by Hon. Royal S. Copeland, Senator and former Health Commissioner of New York City. The bill calls for an inspection and test by the U. S. Bureau of Standards of all clinical thermometers offered for sale in this country. About fifty men were present, representing manufacturers, manufacturers, dealers, American Medical Association, Surgeons General of the Army, Navy, and Public Health, Hospital Association, American Veterinary Medical Association, and others.

Senator Copeland explained the reasons for supervision of clinical thermometers. His object in introducing the bill was to insure the greatest possible degree of accuracy and reliability. Judging from his experience as a physician he felt sure that there was great need for regulation, that Federal regulation would be much better than city or state, and that a testing system would be preferable to licensing.

These three questions were earnestly discussed by several representatives. It was the unanimous opinion of all present

that regulations are necessary and that the work of testing or licensing should be done by the U. S. Bureau of Standards. Also that the Federal law should be backed up by suitable state legislation where necessary.

There was a difference of opinion regarding the licensing versus the testing system. It was the unanimous opinion that perfect thermometers are not made. Of those submitted to the Bureau of Standards to be tested, about ten per cent are rejected. From a lot purchased in the open market at random, and submitted to test by the Bureau of Standards, forty per cent were rejected. When the manufacturer is equipped and licensed about five per cent of his thermometers would be rejected. Nobody at the Conference submitted a plan whereby the five per cent of bad thermometers would not find sale with the ninety-five per cent of those reliable, under the license system alone.

The question of licensing versus testing was put to a vote and nine voted for licensing and twenty-five for testing; five did not vote for the reason that they represented associations which had not considered the question or authorized their representatives to act; each of the three representatives from New York City, Massachusetts, and Connecticut, where the licensing system has been tried, voted for testing.

In the American Medical Association questions of legislation can be handled by the House of Delegates; the American Veterinary Medical Association has not authorized such action except when instructed to do so at a regular or special meeting. There can be no doubt of the necessity for the reliability of clinical thermometers used by veterinarians; those who are sufficiently interested should make their views known to members of Congress and do it soon. Resolutions from associations and letters from individuals would help in getting suitable laws and regulations on this subject.

C. J. MARSHALL.

A. V. M. A.

The name of Dr. F. Torrance should be added to the International Committee on the Control of Bovine Tuberculosis, as published in the February JOURNAL, p. 656.

Dr. O. E. Troy has found it impossible to act as Resident Secretary for New Mexico, and President Stange has appointed Dr. F. H. Barr, of Albuquerque, to the office.

NECROLOGY

GEORGE BYRON DUBOIS

Dr. Geo. B. DuBois died at Wilkes-Barre, Pa., December 3, 1923. He was born at Dimmick, Susquehanna County, Pa., on May 15, 1863. He attended the rural schools and prepared for college at the Keystone Academy at Factoryville, Pa. He taught school for a while and then entered the Ontario Veterinary College, from which he was graduated in 1887.

Starting in practice at Plymouth, Pa., Dr. DuBois moved to Wilkes-Barre the following year—1888, and resided there until his death. He was a charter member of the Wilkes-Barre Driving Club and served as vice-president of the Wilkes-Barre Riding and Driving Club. He owned several prominent racing horses at various times.

Dr. DuBois was a member of the Pennsylvania State Veterinary Medical Association. He is survived by his widow, one son and one brother.

GEORGE A. DALLIMORE

Dr. G. A. Dallimore died at his home in St. Paul, Minn., December 19, 1923, at the age of 77 years. He had been in active practice in St. Paul for a long time. At one time he was a member of the Minnesota legislature. He was a graduate of the Ontario Veterinary College, class of 1879, and was a former member of the Minnesota State Veterinary Medical Association.

GEORGE NOBLE KINNELL

Dr. George N. Kinnell died suddenly at his home in Pittsfield, Mass., January 15, 1924. He had been in poor health for about a year. He was 61 years of age.

Born in Dumfres, Scotland, the birthplace of Andrew Carnegie, he attended the Royal College of Veterinary Surgeons, in Edinburgh, and was graduated second in a very large class, in 1885. He practiced in South Wales for ten years. He located in Pittsfield about 35 years ago and built up a very lucrative practice.

Dr. Kinnell was the inventor of a non-slip, emergency horseshoe. He perfected this shoe while in active practice and later showed it to some friends in Lenox, including Mrs. George Westinghouse, wife of the inventor of the air-brake. She recognized its merits and interested some New York capital in the

invention. Shortly afterwards numerous societies for the prevention of cruelty to animals recommended its adoption. The New York City fire and police departments adopted it, as did the black horse troop for presidential inaugurations in Washington. Patents were secured in the United States, Canada and abroad. Dr. Kinnell is said to have realized a very large sum from his invention, both before and at the time that all rights were sold to the American Chain Company.

Dr. Kinnell was at one time Inspector of Milk, Animals and Provisions, for Pittsfield. He was one of two citizens to introduce curling to Pittsfield. He was a charter member of the Saturday Evening Club, a literary and social organization. He wrote a great deal during the early years of his life and was regarded as a good judge of music and of dramatic productions and a discriminating critic.

In an editorial comment *The Berkshire County Eagle* paid him the following tribute:

> So good a friend he was that children turned to him naturally as to a big elder brother, whose heart was warm as it was tender. He knew life—knew it on many sides. He was an educated man. In pursuing his studies and his reading he did not neglect the cultural phase. When any utterance that was characterized by nobility of expression came to his attention, he was quick to pass it on. He knew the lyric and the epic qualities that are in the background of our literature. Even his casual reports and letters were illumined by that originality of form that he knew so well how to command. The world knew him as a man skilful in his profession, as a man who did well everything he undertook, as an inventor, as a businessman. The circle of his intimates knew him as a raconteur of exceptional brilliancy, as a man of lambent wit, as a man who enjoyed the warmth and color of poetry and story and song—the varied strains of the best emotional life with its unconscious loveliness.

He is survived by two daughters and two sons.

CHARLES A. SCHAUFLER

Dr. Charles A. Schaufler died at his home, 1338 Hunting Park Avenue, Philadelphia, Pa., January 24, 1924. He had been sick for about a week, when he took a chill during the course of his work and in a few days developed acute nephritis, which resulted in death.

Dr. Schaufler was born in Atlantic City, N. J., April 1, 1860. He was educated in the public schools of that city and Chester Valley Academy, Downingtown, Pa., the German High School, Baden Baden, Germany, and received his veterinary degree from the Royal Veterinary College, Stuttgart, Germany, in 1881. For a number of years he was engaged in private practice in Philadelphia.

On June 19, 1893, Dr. Schaufler received an appointment to the Bureau of Animal Industry, since which time he had been continuously in charge of the Philadelphia station, a longer period than any other inspector-in-charge has ever enjoyed.

Dr. Schaufler joined the A. V. M. A. in 1884, and, at the time of his death, was one of the three remaining members who joined that year. He was also a member of the Pennsylvania State Veterinary Medical Association. He is survived by one son.

EDWIN P. HENDERSON

Dr. Edwin P. Henderson, of Houlton, Maine, died on January 26, 1924, his 53rd birthday. Death followed an attack of acute indigestion with heart involvement.

Dr. Henderson was born at Chelsea, Mass., January 26, 1871. He was a graduate of the New York College of Veterinary Surgeons, class of 1891. He also atended McGill University. He had been in the service of the B. A. I. for twenty-one years, and during the past twelve years held the position of U. S. Inspector-in-charge of the Northern Maine border.

Very active in Masonic circles, he was Master of Monument Lodge No. 86, Past High Priest, Royal Arch Chapter No. 20, Captain General, Commandery No. 17, St. Aldermar, etc. He was a member of and held office in the Rotary Club of Houlton. He joined the A. V. M. A. in 1916.

Dr. Henderson was held in the highest esteem by the people with whom he came in contact, including the leading citizens of Northern Maine. A man of magnetic personality, he was loved and honored by all who knew him.

He is survived by his widow, one daughter, his mother, and two sisters. Dr. Harry W. Jakeman, of Boston, Mass., is a first cousin of the deceased.

PERCY DUNPHY

Percy Dunphy, eldest son of the late Dr. George W. Dunphy, of East Lansing, Mich., and elder brother of Lt. Charles B. Dunphy, of Fort Benning, Ga., died at Eaton Rapids, Mich., January 29, 1924. Death was due to nephritis.

JOHN E. BLACKWELL

Dr. John E. Blackwell died at his home, in Pittsburg, Kansas, January 30, 1924, after an illness of six weeks. In December he suffered a slight cerebral hemorrhage. Nephritis was the cause of death.

Born in Barrie, Ontario, in 1865, he attended high school and was graduated from the Ontario Veterinary College, in 1887. He located in Omaha, Nebr., and established a practice there. He entered the service of the B. A. I. in April, 1893, and continued that connection until his death, having been stationed in Omaha, Nebr., St. Joseph, Mo., Hutchinson, Kan., and lastly at Pittsburg, Kan. Although not engaged in active practice he maintained a keen interest in current veterinary practice and was a lover of small animals.

Dr. Blackwell joined the A. V. M. A. in 1907. He was a Mason and a member of the Episcopal church. He leaves a widow, two brothers and two sisters.

JAMES DAVID NIGHBERT

Dr. J. D. Nighbert died at his residence in Pittsfield, Ill., January 31, 1924. He had been sick five weeks, but had been confined to his bed only three days. Death resulted from acute jaundice.

Dr. Nighbert was born near Palmyra, Macoupin County, Ill., October 20, 1856. He received his early education in the common school and in Blackburn University, at Carlinville, Ill. He received his veterinary education at the Ontario Veterinary College and was graduated in 1889. He located in Pittsfield immediately and remained there the rest of his life.

For a time Dr. Nighbert was a member of the Illinois State Board of Veterinary Medical Examiners. He joined the A. V. M. A. in 1899, and was a member of the Illinois State Veterinary Medical Association. He was a member of the A. F. & A. M. and of the Eastern Star.

Dr. Nighbert is survived by his widow, one daughter and one son, Dr. Maynard S. Nighbert, a veterinarian, and now serving his second term as mayor of Pittsfield, three brothers, one a veterinarian, Dr. E. M. Nighbert, of Queen City, Mo., and one sister.

In commenting upon his death *The Pike County Republican* paid him the following tribute:

> Few men are as well known in Pike county as was Dr. Nighbert. None had a fairer reputation. Honest and unassuming, his life was one of fine service. He was universally trusted. Upon him the public bestowed unalloyed confidence. And in keeping with the high plane of his community life, his home life was ideal. He was one of the best of neighbors.

E. BLAINE HASKIN

Dr. E. B. Haskin, of Indianapolis, was instantly killed, with sixteen other passengers, in a collision of two cars of the Indiana Union Traction Company, two miles east of Fortville, Ind., February 2, 1924. He was 39 years of age.

At the time of his death, Dr. Haskin was B. A. I. Inspector-in-Charge of Tuberculosis Eradication in the State of Indiana. He was a graduate of the Cincinnati Veterinary College, class of 1910. He joined the A. V. M. A. in 1919. He was unmarried.

JAMES HART

Dr. James Hart came to a very untimely end at Jefferson City, Mo., February 3, 1924.

A native of Ireland and a graduate of the Royal College of Veterinary Surgeons, Glasgow, in 1884, he came to America and practiced in Nebraska, Iowa, and other states. During the late war he was employed by the British Government and was stationed at Lathrop, Mo. Later he became an employe of the Missouri State Penitentiary, in the capacity of guard.

On the night of February 3, he was attacked by three desperate convicts who had sawed their way out of their cell. He was struck a violent blow on the head, gagged, bound and cast into his shelter house, where he was found early on the morning of February 4. The convicts made their escape by scaling the stockade wall with the aid of a ladder. They were located, however, the evening of the 4th, in a straw-stack near Jefferson City, and made to pay for their crime with death, their bodies being literally riddled with buckshot from the guns of their pursuers, who showed them no quarter.

Dr. Hart joined the A. V. M. A. in 1917. He was a member, in good standing, of numerous Masonic orders. No near relatives are known in this country. He was 60 years of age.

BENJAMIN M. GOODMAN

Dr. B. M. Goodman died at Cincinnati, Ohio, February 4, 1924. His death was due to pulmonary complications following a long drawn-out struggle against diabetes.

Members of the A. V. M. A. will recall several reports in the JOURNAL from time to time, concerning Dr. Goodman, who was given financial assistance from our Relief Fund on two occasions. He was among the first to be treated with insulin, which only temporarily retarded the progress of the diabetic condition from which he suffered.

Born in Poland, January 28, 1887, Dr. Goodman received a high school education and later attended the Cincinnati Veterinary College, from which he was graduated in 1912. He practiced for a short time and the following year entered the service of the B. A. I. His first assignment was on meat inspection, at Chicago; later he was transferred to the Virus-Serum Control Division, and served at several stations. He resigned from the service in 1916, to enter the employ of the Eagle Company.

Dr. Goodman joined the A. V. M. A. in 1919. He was a member of the Indiana Veterinary Medical Association. He was a member of the Thorntown (Ind.) Lodge of Masons. He is survived by his widow, two sons, his father, his mother, two brothers and three sisters.

Dr. H M. Renner, of Wellsville, Mo., died Dec. 16, 1923, following an operation for appendicitis. He was 40 years of age. He is survived by his widow.

Dr. N. M. Barnes, of Athens, Texas, died Dec. 21, 1923, following a stroke of apoplexy. He was 42 years of age. He is survived by his widow and four children.

Berlin has a cat-muzzling ordinance.

The death-rate in the United States, based on 85% of the population, is 11.8 per 1000.

MARRIAGES

Dr. Edward A. Wilson, of Hackettstown, N. J., to Miss Vivian Edson, of Benton, Pa., February 9, 1924.

Dr. Charles Clediss Beall, of Morgantown, W. Va., to Miss Cora Ellen Bailey, at Pittsburgh, Pa., Jan. 1, 1924.

BIRTHS

To Dr. and Mrs. M. Brodner, of Brooklyn, N. Y., a son, Seymour Wilson, Feb. 2, 1924.

To Dr. and Mrs. E. L. Harvey, of Geddes, So. Dak., a son, Donald Phillip, Jan. 24, 1924.

To Dr. and Mrs. R. W. Williams, of El Dorado, Ark., a daughter, Marian Anna, Jan. 2, 1924.

To Dr. and Mrs. Murray E. Patrick, of Greensburg, Pa., a son Murray E. Jr., Sept. 15, 1923.

PERSONAL

Dr. F. Gunster (San Fran. '15), formerly at Corvallis, is now at The Dalles, Ore.

Dr. L. D. Horner (U. P. '98) is the authorized Ford dealer for Woodstown, N. J.

Dr. B. A. Utter (McK.'16) has removed from Monterey, Minn., to Welcome, Minn.

Dr. E. M. DeTray (Ont. '07) was elected mayor of Napoleon, Ohio, at the recent election.

Dr. A. Paddon (Chi. '18) has removed from Mossbank, to Lucky Lake, Saskatchewan.

Dr. A. C. Stever (U. S. C. V. S. '07) is with the B. A. I., with headquarters at Meadville, Pa.

Dr. John J. Martin (U. S. C. V. S. '17) has removed from Newark, N. J. to Irvington, N. J.

Dr. C. J. Griffin (O. S. U. '13) has removed from Spencerville, Ohio, to Middletown, same state.

Dr. James A. Waugh (Ont. '82), of Pittsburgh, Pa., celebrated his 68th birthday on February 4, 1924.

Dr. J. H. McLeod (McGill '93) is now located at Maquoketa, Iowa, in the capacity of County Veterinarian.

Dr. E. J. McBride (Corn. '20), formerly of Warrensburg, N. Y., is now at 448 Ashland Ave., St. Paul, Minn.

Dr. George Smith, Jr., (O. S. U. '10) is Chief Food and Drug Inspector in the Division of Health, of Toledo, Ohio.

Dr. Harry T. Moss (Cinn. '05), of Dayton, Ohio, has been elected President of the Kiwanis Club, of Dayton, for 1924.

Dr. A. C. Curtiss, (Gr. Rap. '11), formerly of Wauseon, Ohio, is now assisting Dr. H. T. Carpenter, of Detroit, Mich.

Dr. E. T. Hallman (Ala. P. I. '10) has been serving as acting mayor of East Lansing, Mich., for the past six months.

Dr. Robert F. Fisher (Chi. '06) has been elected City Milk and Meat Inspector, by the City Council of Paducah, Ky.

Dr. C. A. Miller (K. C. V. C. '09), formerly of Sioux City, Iowa, is now stationed at San Diego, Calif., in the B. A. I. service.

Dr. C. C. Hunt (Ind. '10) has notified us of his change of address, from Lorain, Ohio, to 107 Washington Ave., Warren, Ohio.

Dr. W. E. Shumaker (Chi. '18), of Villa Ridge, Ill., is County Manager of the Pulaski County Live Stock Shipping Association.

Dr. C. D. Lash (K. C. V. C. '10) has been transferred from Chicago, Ill., to St. Louis, Mo., on meat inspection duty for the B. A. I.

Dr. H. A. Wilson (K. C. V. C. '13), has been reappointed State Veterinarian of Missouri, for four years, by the State Board of Agriculture.

Dr. G. J. Mutziger (K. C. V. C. '05) has been transferred from St. Joseph, Mo., to St. Louis, Mo., on meat inspection duty for the B. A. I.

Dr. J. M. Baxter (U. S. C. V. S. '16), formerly of Detroit, Mich., is now with the B. A. I., at Coatesville, Pa. Address: c/o Y. M. C. A.

Dr. H. J. Hearrington (St. Jos. '19) has been appointed Chief of the Department of Sanitation, Milk and Dairy Inspection, for the City of Okmulgee, Okla.

Dr. Charles H. Seagraves (San Fran. '18), formerly of Coeur d'Alene, Idaho, is now located at Astoria, Ore., in partnership with Dr. J. F. Rankin.

Dr. Cliff D. Carpenter (Corn. '20) has established the Petaluma Avian Pathology Laboratory, in connection with his poultry practice, at Petaluma, Calif.

Dr. E. G. Folsom (Ont. '08), of Detroit, Mich., recently underwent an operation for the removal of a renal calculus, and at last reports was doing nicely.

Dr. R. W. Tuck (Ont. '92) has been elected an honorary fellow of the Central Division of the National Veterinary Medical Association of Great Britain and Ireland.

Dr. B. F. C. McCoy (Ind. '07), of Columbus, Ind., has been in poor health for a number of months. He is expected to go to Texas shortly, for the benefit of his health.

Dr. Ward Giltner (Corn. '06), of East Lansing, Mich., addressed the Michigan Shorthorn Breeders' Association, on Feb. 7, 1924, on the subject of "Modern Views of Disease Control."

Dr. J. P. Hutton (O. S. U. '11), of East Lansing, Mich., addressed the Michigan Horse Breeders' Association, on Feb. 9, 1924, on the subject of "The Care of Horses' Feet."

Dr. A. H. Quin, Jr. (Chi. '20) formerly of Fort Dodge, Iowa, has been transferred to Sacarmento, Calif., in the interests of the Fort Dodge Serum Co. He gives his address as Box 552.

Dr. Walter L. Martin (K. C. V. C. '11), formerly of Kansas City, Kans., has been detailed to the B. A. I. station at Pittsburg, Kans., made vacant by the death of Dr. John E. Blackwell.

Dr. J. C. McGrath (San Fran.), of Phoenix, Ariz., was recently appointed by the Supervisors of Maricopa County to assist the federal and state forces in the work of tuberculosis eradication in Arizona.

Dr. E. T. Hallman (Ala. P. I. '10), of East Lansing, Mich., addressed the Michigan Guernsey Cattle Club, on Feb. 5, 1924. His subject was "New Developments in Combating Contagious Diseases."

Dr. C. S. Parks (Ind. '21), of Albemarle, N. C., recently ordered a second A. V. M. A. automobile emblem, to replace his first one, which was stolen. He asks: "Can you imagine anyone stealing an emblem of this sort?"

Dr. H. E. Van Der Veen (Chi. '17) of Lake Geneva, Wis., is employed by the Borden's Farm Products Company of Illinois, as Veterinary Inspector. He was recently commissioned as First Lieutenant in the Veterinary Officer's Reserve Corps.

Dr. W. E. Frink (Corn. '07), writes from Hollywood, Calif., as follows: "I think the JOURNAL is getting better with each issue. The page of personals enables one far from his native land to keep in touch with the doings of friends and the articles on scientific matters seem to me well chosen."

Dr. Ernest F. Jardine (Ont. '11), of Basseterre, St. Kitts, rode his mount "Flashlight" to victory in the James Robertson Cup Race, at the Sandown race course, St. Kitts, January 10. Dr. Jardine's half-thoroughbred mare "Bonnie Bell" was a good third in the 6-furlong race for the Merchants Plate, the day before.

The younger daughter of Dr. and Mrs. W. H. Welch, of Lexington, Ill., recently met with a bad accident while bob-sledding. Her injuries consisted of a fractured rib and an injured kidney, the extent or character of which had not been determined at last reports, although her temperature and pulse had been normal for two days. We hope for her speedy recovery.

Dr. Don A. Boardman (Corn. '18), of Rome, N. Y., was the victim of a very serious automobile accident, on November 26, 1923. Dr. Boardman was driving to Itahca with a friend, in his Liberty Six. At the intersection of the Seneca Turnpike and Oriskaney Falls Road, their machine was hit by a Ford touring car, and turned turtle. In the mix-up the car in which Dr. Boardman was riding was knocked so as to fall across his shoulders, breaking the second and third ribs on the left side and so injuring his shoulders that he could not lift a finger the next day. In addition, Dr. Boardman received a smashed finger, contusions on both sides of his head, one black eye, the other infiltrated with blood, and a puncture of the left lung. The latter injury caused him more trouble than any of the others. Dr. Boardman was kept straight on his back for four weeks without being able to lift his head from his pillow. He is still confined to his home and improving slowly.

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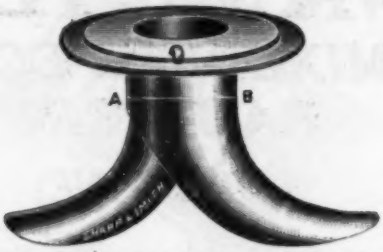
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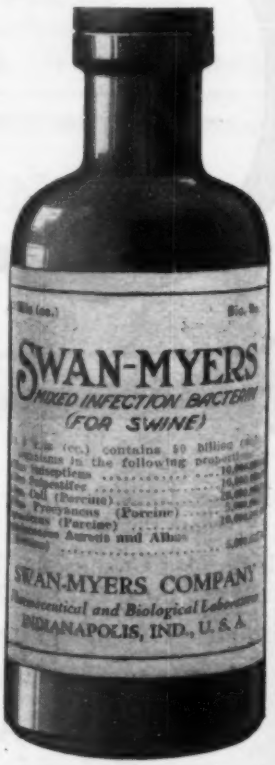
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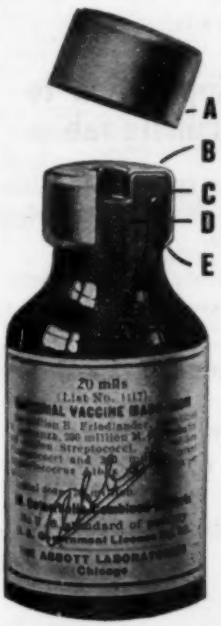
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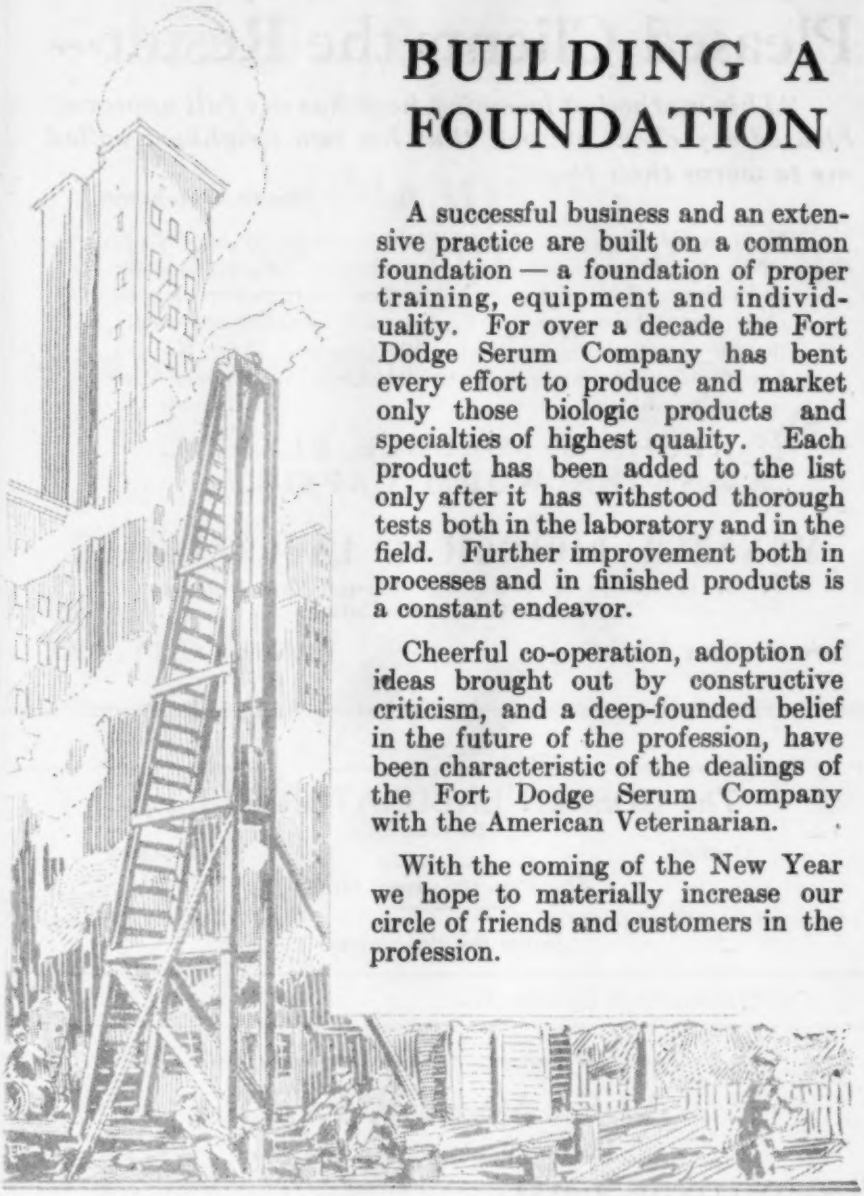
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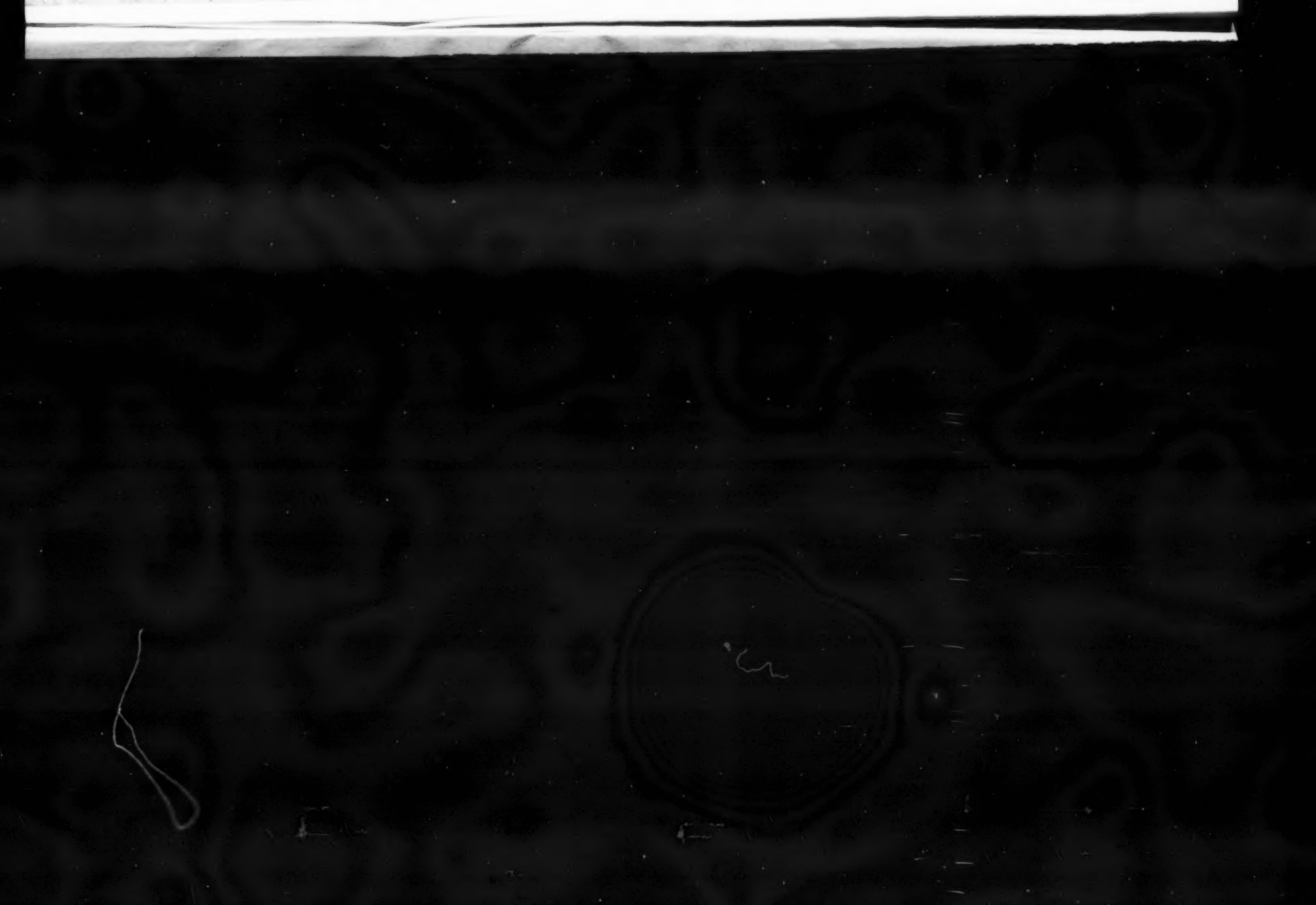
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